

PRELIMINARY ASSESSMENT

of

Sunshine Cleaners

1012 NW 1st Street

Oklahoma City, Oklahoma County, Oklahoma, 73106

March 2015

Prepared for the

United States Environmental Protection Agency

Region VI

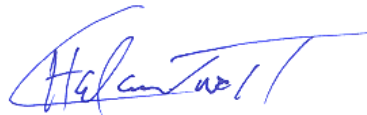
Reviewed by:



Amber Edwards

Environmental Programs Specialist IV

Prepared by:



Hal Cantwell, Environmental Programs Specialist IV

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I. Introduction

The Oklahoma Department of Environmental Quality (DEQ) is tasked by the U.S. Environmental Protection Agency (EPA), as authorized by CERCLA and as amended by SARA, under the Multi-Site Cooperative Agreement (CA# V-00645-01) to conduct a preliminary assessment (PA) of The Sunshine Cleaners site, CERCLIS ID# OK0002024594. The primary purpose of this PA is to assess the immediate or potential threat of wastes at the site that may impact public health and the environment and to collect information sufficient to support a decision regarding the need for further action under CERCLA/SARA. The scope of this investigation includes the review of available information from DEQ and other state agencies' files, a comprehensive target survey, and an on-site reconnaissance.

II. Site Description, Operational History and Waste Characteristics

Site Description

The Sunshine Cleaners site is located at 1012 NW 1st, Oklahoma City, Oklahoma. The description of the site was obtained from Oklahoma County Property Records and site reconnaissance on January 16 and March 16, 2014. (References 1 & 2; Figures 1 & 2). The site has the coordinates of 35.468641° north latitude and -97.529154° west longitude (References 3).

Oklahoma County is hot in summer and cool in winter. The Koopen-Geiger climate classification is Cfa, (warm temperate, fully humid, hot summer). (Reference 4; Figure 4). The average annual temperature is 61° F, and the average maximum temperature is 72° F. The average daily minimum temperature is 49° F. The climate is neither excessively wet nor dry. The average annual precipitation is 36.21 inches and the average wind speed is 7 MPH (Reference 5)

The Sunshine Cleaners building is located at 1012 NW 1st Street, Oklahoma City, Oklahoma. The site is an abandoned property currently owned by (b) (6) since 2002. (Reference 2). Sunshine Cleaners site is located in an industrial area on the southwest corner of NW 1st Street and Classen Boulevard. To the north is a construction equipment rental business called WACO Rentals, to the south is an unoccupied storage warehouse, to the west is a screen-printing store called Ski's Tees and further west an industrial engine parts and machine shop, and to the east is Southwest Tile and Marble. The 17,000 square foot building is located on a half-acre lot. The brick building has a concrete floor, steel trusses, and no roof. Most of the doors and windows are boarded up. There is some staining in the alleyways and inside the building. There was evidence of trespassing. It appears there was a shipping and receiving area on the south side of the building and the drive through was located at the northwest corner of the building.

Environmental Justice

The Site may have Environmental Justice issues but it is unlikely due to the almost completely industrial nature of the surrounding areas and what residential development there has been new urban redevelopment. (Reference 14)

Operational History

The building was constructed in 1929 by the Reinhart & Donovan Company. The first story was a laundry with steam boilers, electric generators, engines, washing equipment, water softeners, and storage tanks. The second story held offices, restrooms, and a dining room. Old advertisements from The Oklahoman newspaper show that Sunshine Cleaners was offering dry

cleaning services and had a drive thru sometime in the 1950's (Reference 6 & 11). In 1969 (b) (6) bought the property and started Swan Towel & Linen Service, by 1981 (b) (6) sold the property to his ex-wife (b) (6) sold the property in 1989 to (b) (6) (b) (6) The same year the City of Oklahoma City boarded up the unsecured building. Most of the doors and windows are still boarded up. There is some staining in the alleyways and inside the building. Inside the building it appears, a boat, front loader, police car, and bus are being stored (Reference 1). There are no existing complaints regarding the site in the Oklahoma County DEQ files (Reference 7).

Waste Characteristics

It is unknown if hazardous waste was generated during the early years of operation, but most drycleaners during this time period used tetrachloroethylene and disposal practices were informal and haphazard.

III. Pathway and Environmental Hazard Assessment

Ground Water

Residents of Oklahoma City are supplied water by the City of Oklahoma City. Water comes from several lakes: Lake Hefner, 7 miles northwest; Lake Overholser, 8 miles west; and Lake Stanley Draper, 9 miles southeast (where water is pumped from Lake Atoka, 100 miles to the southeast). The site is in a recharge area for the terrace and alluvial deposits of the Oklahoma River. The alluvium overlays the Salt Plains Formation of the Hennessey Group. General ground water flow is southward towards the Oklahoma River. The Salt Plains Formation is a red-brown blocky shale and orange-brown siltstone 200 feet thick. (Reference 12). There is no information on whether there has been a release to ground water.

There is one public water supply well located approximately 3.8 miles northeast of the site (Reference 8). Thirteen wellhead protection areas are within the 4-mile radius of the site. (Reference 8). There are no municipal wells found within a 4-mile radius of the site.

No domestic well is considered to be a primary target. There are no domestic wells within 2 to 3-mile radius of the site to be considered to be secondary targets for the purpose of this PA.

A Phase II environmental assessment for a property located at Classen Boulevard and Main Street (approximately 1200 feet southeast of the site) found numerous areas of subsurface contamination. Ground water levels ranged from as high as 11.5 feet to as deep as 16.2 feet. A plume of chlorinated solvents has been delineated beginning approximately 1600 feet southeast of the site and moving away from the site. An area of petroleum constituent contamination was delineated beginning approximately 800 east by southeast of the site extending away from the site. No ground water wells or ground water monitoring wells were installed on the west side of Classen Boulevard within the same block as the site so no data is available for ground water contamination below the site. (Reference 10)

Surface Water

Average statistical annual precipitation for the site is 34.06 and the 2-year 24-hour rainfall is 3.7 inches (Reference 5). The site is located outside of the 100- and 500-year flood plain (Reference 9). There are no drinking water intakes associated with the surface water pathway (Reference 8).

There are ecological systems of importance within a 4-mile radius of the site. Habitats of the endangered, threatened, and species of special concern below are known to occur at or near the site.

Endangered, Threatened Species (Reference 13)

Species	Classification
Interior least tern	Endangered
Whooping Crane	Endangered
Bald Eagle	Threatened
Piping Plover	Threatened

All targets under the surface water pathway are considered secondary.

Soil Exposure

A gravel parking lot is located on the west side of Sunshine Cleaners, a sidewalk on the north side, a concrete alleyway on the south side, and a grassed area on the east side. It appears that inside the building is a concrete floor. According to the Natural Resources Conservation Service Custom Soil Resource Report generated for this site, the site falls completely in Urban land (websoilsurvey.nrcs.usda.gov). There is some staining in the alleyways and inside the building. It is unknown if there was a release of tetrachloroethylene to the ground. There are no residents on the site. There are 7,070 residents within the 1-mile radius of the site (References 8). There are no businesses on-site and therefor 0 employees on-site. There are no schools or daycare centers within 200 feet of the site (Reference 1).

Air

Based on the 2010 census, Oklahoma City has a population of approximately 599,199 persons, and is located in Oklahoma County, which has a population of 3,815,780 persons. A particulate release to the air is not suspected from any source on-site and no release was observed during site reconnaissance. No odors were detected during site reconnaissance (Reference 1). The estimated population and the wetland acreage within a 4-mile radius of the site are described in the table below (References 8).

Distance from Site (mi)	Est. Population	Est. Wetland Acreage
On-site	0	0
0 – ¼	2173	0
¼ - ½	1800	5
½ - 1	4544	86
1 – 2	23590	114
2 – 3	51563	106
3 – 4	64704	320
Total	148,374	631

The Oklahoma County Jail is located 900 feet east of the site. Emerson Alternative High School is located 0.51 miles northeast, Villa Teresa Catholic School is located 0.89 miles northeast, and Eugene Fields Elementary is located 1.04 miles north of the site. The 2173 people within ¼-

mile radius under this pathway are considered to be primary population targets. All other targets under the air pathway are considered to be secondary targets for the purpose of this PA.

IV. Summary and Conclusions

Sunshine Cleaners site was a dry cleaner that operated from the 1930s to the 1980s most likely using tetrachloroethylene as a cleaning solvent. Staining from undetermined sources and undetermined constituents was observed within and surrounding the building. Disposal practices of dry cleaners of the era the Sunshine Cleaners was in business commonly result in tetrachloroethylene soil and subsurface contamination.

The site is surrounded by businesses, with schools and residences nearby. The Oklahoma River is 1.2 miles south of the site. Because of the potential release of tetrachloroethylene that may affect nearby residents, workers, surface water, and ground water resources, it is recommend by DEQ that a Site Inspection be conducted at the Sunshine Cleaners site.

V. Figures

Figure 1
Sunshine Cleaners Site Vicinity Map



Figure 2
Sunshine Cleaners Site Location Map 2

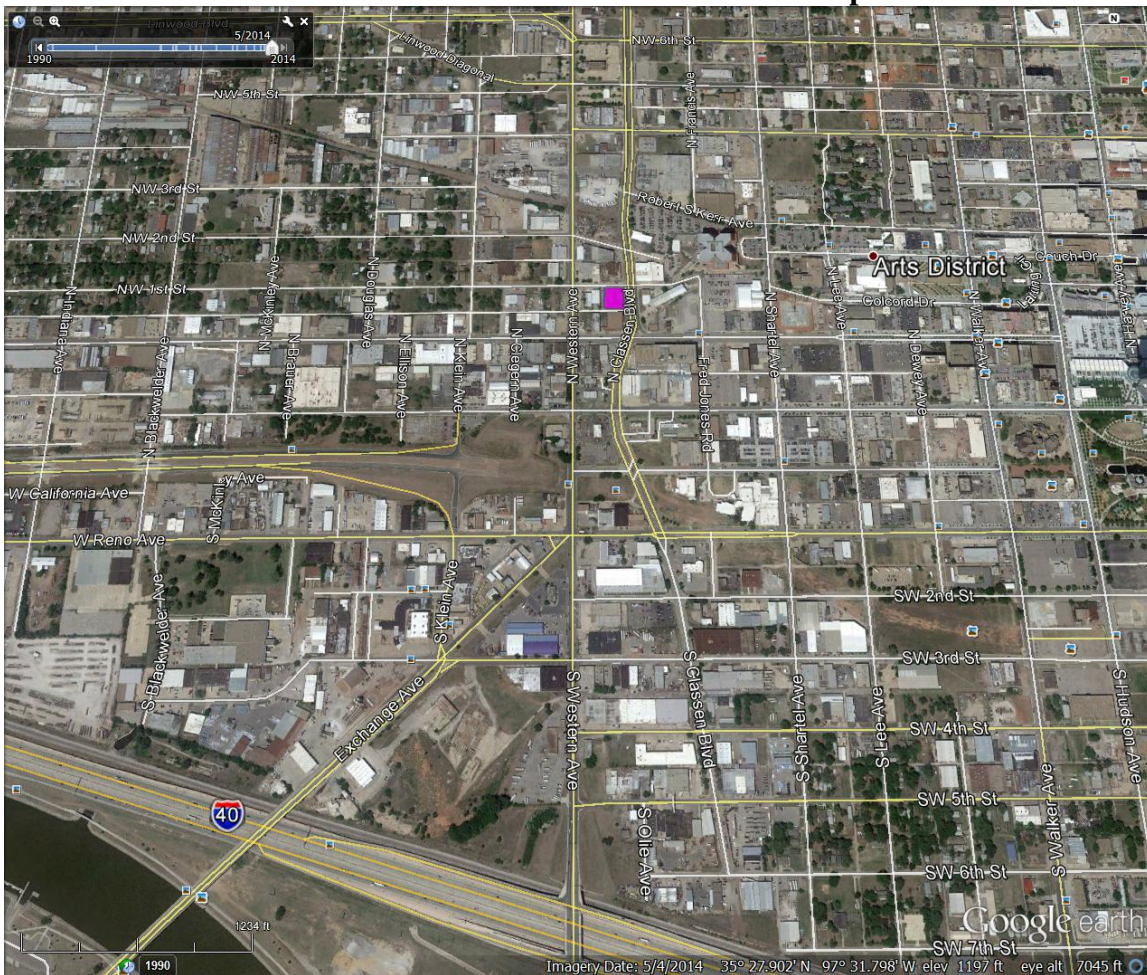


Figure 3

Sunshine Cleaners Site, Well Location Map

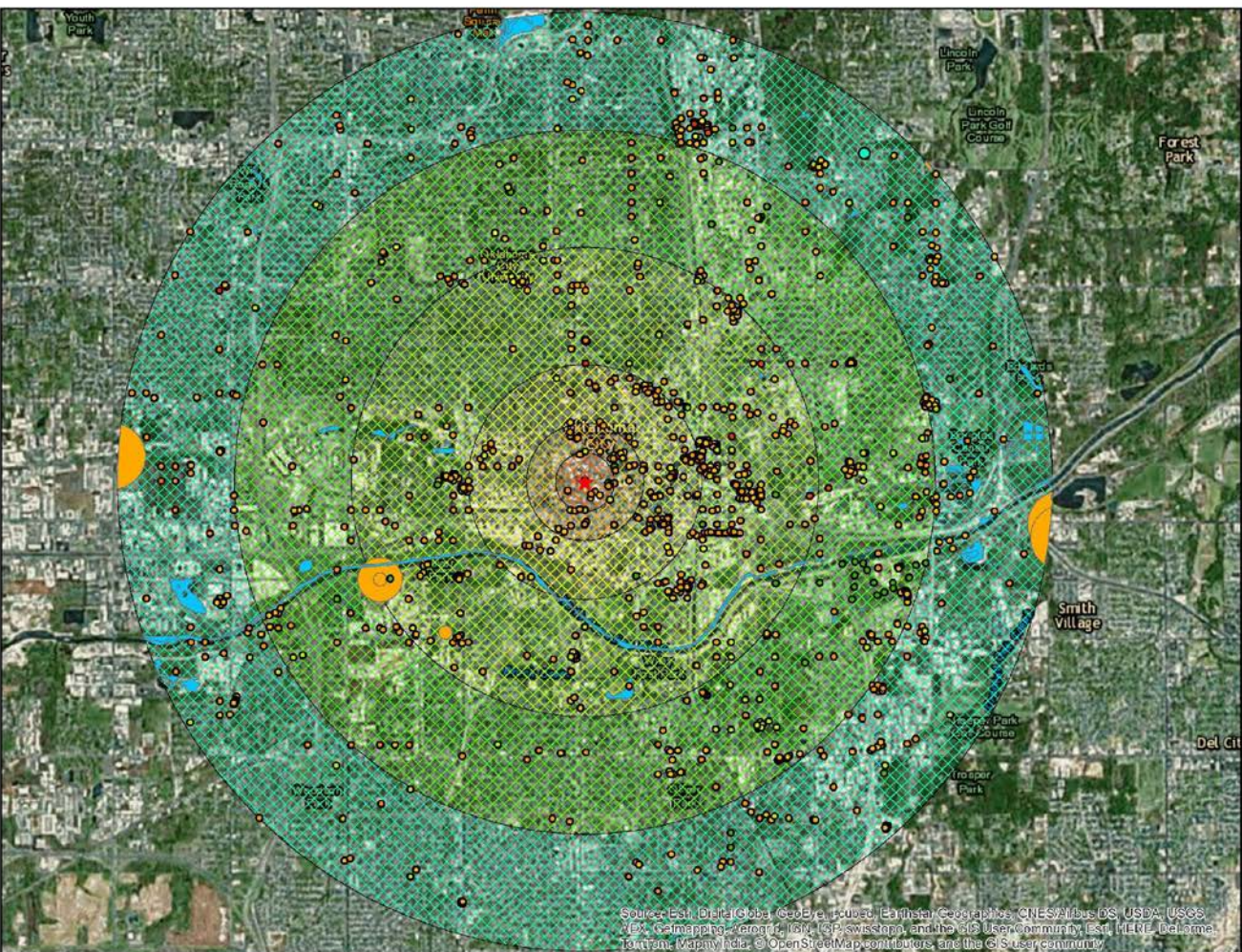
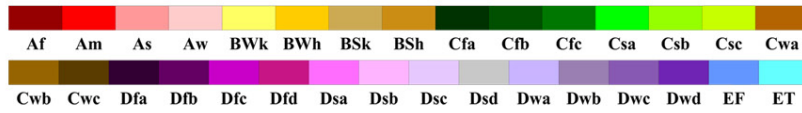


Figure 4

Köppen-Geiger Climate Map

Main Köppen-Geiger Climate Classes for US counties

updated with CRU TS 2.1 temperature and VASCLimO v1.1 precipitation data 1951 to 2000



Main climates

A: equatorial
B: arid
C: warm temperate
D: snow
E: polar

Precipitation

W: desert
S: steppe
f: fully humid
s: summer dry
w: winter dry
m: monsoonal

Temperature

h: hot arid F: polar
k: cold arid T: polar
a: hot summer
b: warm summer
c: cool summer
d: extremely continental

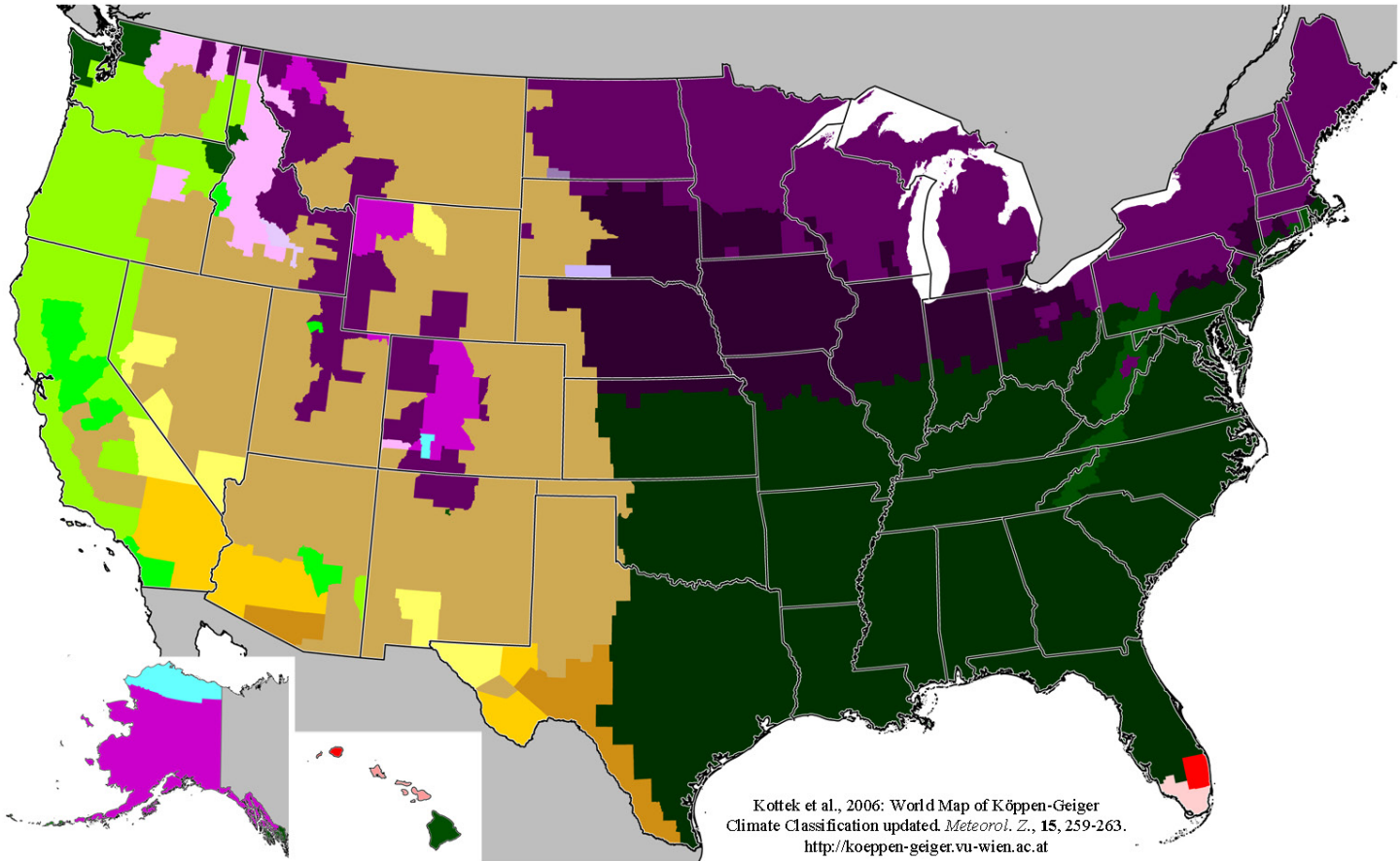
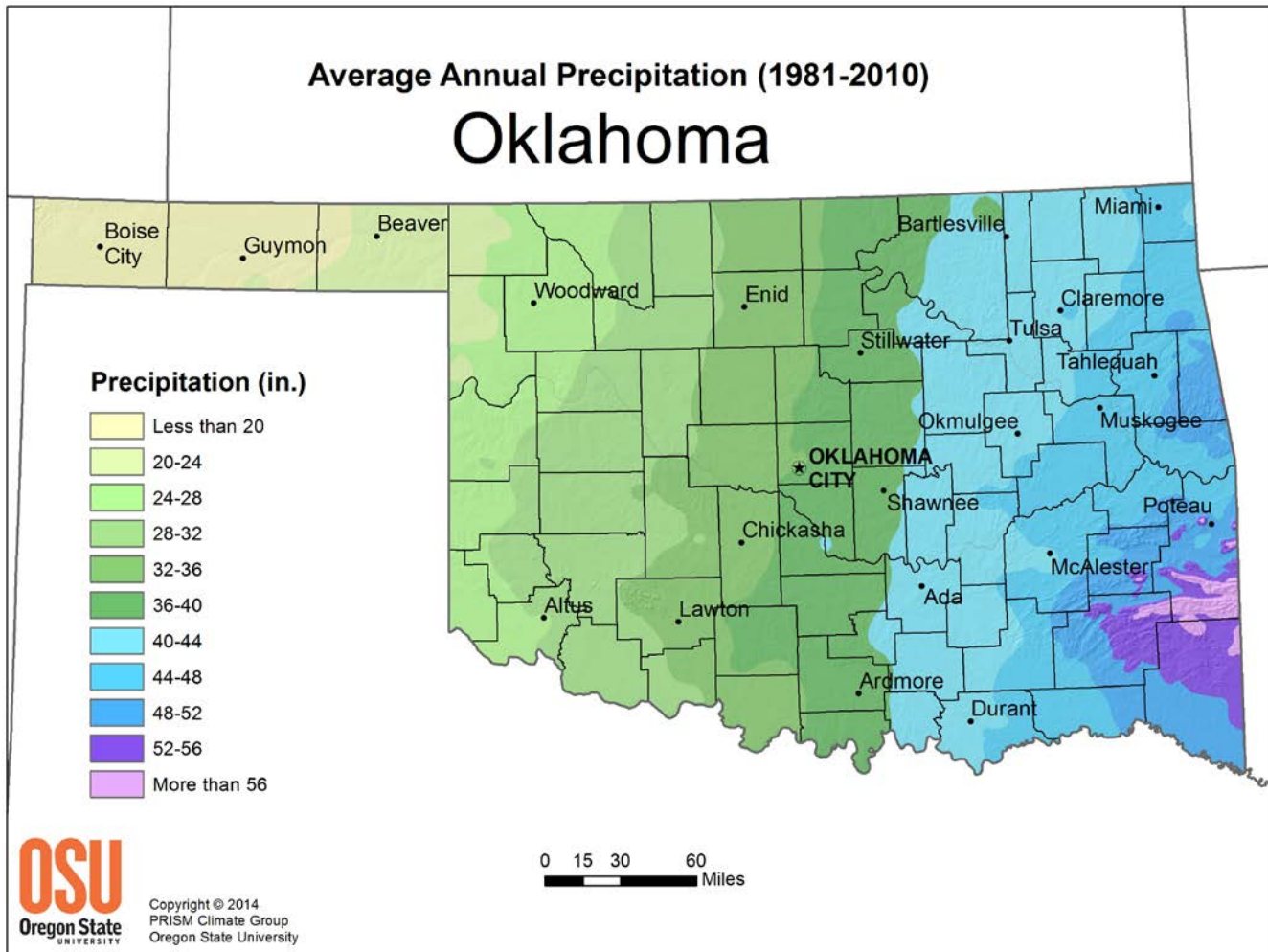


Figure 5

Oklahoma Annual Precipitation map



VI. Site Photographs – Taken 16-March-2015



Sunshine Cleaners Looking north up Classen Boulevard
Photographer: Hal Cantwell



Sunshine Cleaners Southeast Corner looking Northwest at East and South side of building
Photographer: Hal Cantwell



Sunshine Cleaners Southwest Corner looking Northeast at West and South side of building
Garage door and rear entry
Photographer: Hal Cantwell



Sunshine Cleaners Southeast Corner looking South at West side of building
Showing gravel parking lot on west side of structure
Photographer: Hal Cantwell



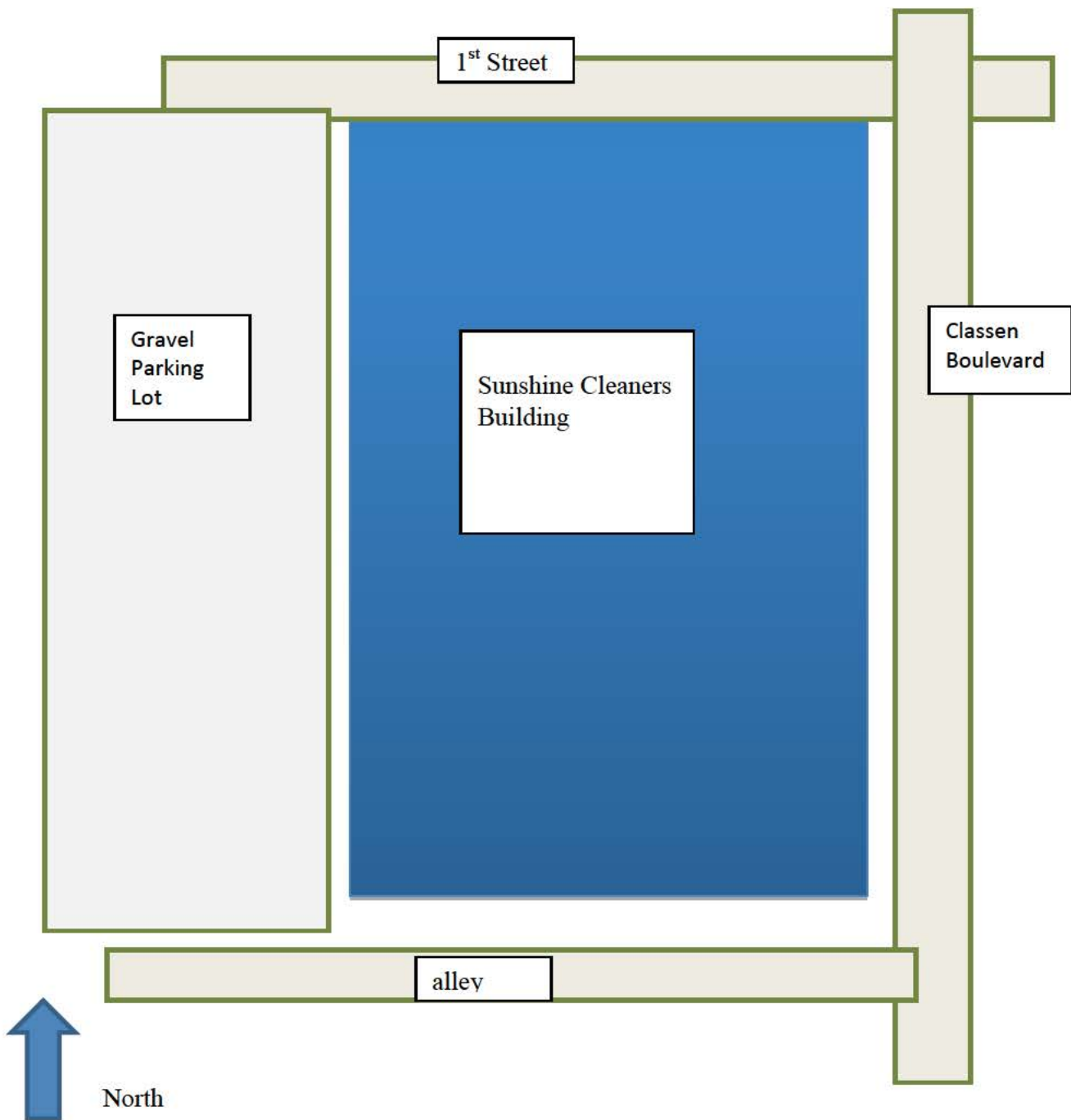
Sunshine Cleaners Northwest Corner looking Southeast at West and North side of building
 Drive through is in Northwest corner of structure
 Photographer: Hal Cantwell



Sunshine Cleaners Northeast Corner looking Southwest at East and North(front) side of building – 1st Street is in foreground, Classen Boulevard to the left of image
 Photographer: Hal Cantwell

VII. Site Sketch

Sunshine Cleaners Site Sketch



VIII. List of References

1. Reconnaissance Checklist PA-SI Sunshine Cleaners
2. Oklahoma County Tax Assessor Records
3. Latitude – Longitude calculation
4. Köppen-Geiger Climate Classes for US Counties
5. Oklahoma Climatological Survey, Central Oklahoma Precipitation and Wind
6. Oklahoman Newspaper Advertisements for Sunshine Cleaners
7. Environmental complaints for Sunshine Cleaners
8. Sunshine Cleaners Population, Public Water Wells, Surface Water Intakes, Wellhead Protection Areas, and Wetlands Areas Map and Memorandum.
9. Sunshine Cleaners Flood Insurance Rate Map, US Dept. of Homeland Security
10. Phase II Environmental Site Assessment -- Fred Jones Building Complex
11. Sunshine Cleaners Pre-CERCLIS Screening Assessment
12. Sunshine Cleaners Hydrological memo
13. US Fish and Wildlife Listed Endangered and Threatened Species
14. US Census Bureau Oklahoma City Quick Facts

References

Reference 1, Sunshine Cleaners Reconnaissance Checklist

Sunshine Cleaners Reconnaissance Checklist:

Date: March 16, 2015 Time of Visit: 11:30 Temperature: 56
Weather: *warm, Partly cloudy, light winds*
Size of Site: *0.4821 Acres*
Site Boundary: *Main Street 2nd add., block: 023, lots 10 thru 15*
Site Description: *abandoned, steel-frame brick building*
Distance to Nearest Residence: *Population is 4544 – residence definition is difficult to define due to there being not traditional housing in this area.*

Residents within 1 mile: *Population is 4544*
of Schools/daycare within 200 feet: *0*
of Workers on Site: *0*
Businesses On-site: *Abandoned*

Type of Ownership: Private, (b) (6) Rev Trust

Years of Operations: *early 1920's through 1988*

Type of Facility: *Laundry and Dry Cleaner*
Descriptions of Operations: *Laundry and Dry Cleaning*

Probable Substances of Concern: *Dry Cleaning fluids, Carbon Tetrachloride/tetrachloroethylene*
Waste Quantity: *unknown, undetermined*
Mass, Volume, or Aerial Size of Sources or Volume of Spills: *no spills noted or recorded*
Descriptions of Prior Spills, Possible Migrations: *Nothing on record*
Contaminated Soil (area): *unknown, undetermined*

Wells On-site (include private): *none*

Important Resources and Environments On or Near the Site: *none*

How Many Rail Lines Existed: *none*

Locations of USTs: *unknown, undetermined – none recorded or discovered*

Storm Water Runoff: *City of Oklahoma City storm water system*

Land Use: North, South, West and East – *urban, industrial and manufacturing*

Other Notable Features Within 1 Mile of the Site: *Oklahoma County Detention Center, ODEQ Office, Oklahoma River, Oklahoma City core center business district*

Creeks, Wetlands, &/or Ponds On-site: *none*

Buildings On-site: *abandoned, steel-frame brick building*

Structures (oil wells): *none*

Odors Detected: *none*

Reference 2 Oklahoma County Property Records

Tuesday, January 14, 2014

Leonard Sullivan-Oklahoma County Assessor Public Access System (Live Records)



Guest Book

TXD Levies

Glossary

Map/GIS Search

New Search

Oklahoma County Assessor Property Display

Screen Produced 1/14/2014 10:35:22 AM

Account #: R013843500 Type: Industrial

Physical Address: 1012 NW 1ST ST

Business Name: UNOCC [SUNSHINE LAUNDRY & CLEANERS (BOARDED UP)]

Map Parcel

OKLAHOMA CITY

Owner Name1: (b) (6) TRS
Owner Name2: (b) (6) REV TRUST

1/4 Section #: 2731

Parent Account:

Mailing Address: (b) (6)

Taxing District: TXD 200TF2I

School System: Oklahoma City #89

City, St. & Zip: EDMOND, OK 730124536

of Bldgs: 1

Acres: .4821

Personal Property

Property Value Information

Value History

Lot Width: 0

Depth: 0

Cross reference for Personal Property

2013

2014

Sketch

Views

Market Value

159,437

June 2014

Taxable Market

120,527

June 2014

Gross Assessed

13,257

June 2014

Exemptions

- 0

- 0

Net Assessed

13,257

June 2014

Tax Rate

115.70

November 2014

Land Value

63,700

If Available

*All Photos may not be Available

2013 Tax Savings

See details

\$495

Click to View taxes on this property

Section: 33 Township: 12N Range: 3W QTR: SW QTR QTR:

Subdivision/Legal Description:

MAIN STREET 2ND ADD Block: 023 Lot: 000

Subdivision Sales

LOTS 10 THRU 15

Click for sales of similar properties

View the 10 newest sales

Last Mailed Notice of Value (N.O.V.) Information

Notice Date	Market Value	Taxable Market	Adjustments/Exemptions	Net Assessed Value
3/29/2013	159,437	120,527	0	13,257

Sales Documents/Deed History

Date	View	Type	Book-Page	Price	Grantor	Grantee
------	------	------	-----------	-------	---------	---------

No Sales Documents returned.

Non Sales Documents/Deed History

Date	View	Type	Book-Page	Grantor	Grantee
6/20/2013	>	13	12304-1016	(b) (6)	EV TRUST
5/22/2002	>	16	8488-495	(b) (6)	
3/21/1989	>	HIST DOC	5891-408	(b) (6)	
12/1/1981	>	HIST DOC	4832-58	(b) (6)	

Account Status/Adjustments/Exemptions

Status/Adjustment/Exemption Type	Effective Year	Assessed Amount
5% Capped Account	1999	

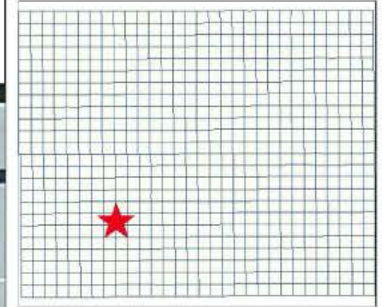
Click on building number to access detailed information:

Bldg #	Built As	Type	Year Built	SQFT	Stories
Bldg #1	Storage Warehouse	Industrial	1929	17,000	1.5



Parcel Owner's Detail

PIN: 2731013843500	
ACCOUNTNO:	R013843500
ACCTTYPE:	Industrial
MAPNUMBER:	2731
TAXDISTRICT:	200TF2I
BUSINESSNAME:	UNOCC [SUNSHINE LAUNDRY & CLEANERS (BOARDED UP)]
PARCELNUMBER:	2731013843500
TAXDISTRICTNAME:	Oklahoma City #89
NAME1:	(b) (6) TRS
NAME2:	
ADDRESS1:	REV TRUST
ADDRESS2:	null
CITY:	EDMOND
STATE:	OK
ZIPCODE:	730124536
TOTALBUILDINGS:	1
PARENTACCOUNT:	
CURRENTMARKET:	Available June 2014
CURRENTACCOUNTADJUSTMENTS:	0
CURRENTASSESSED:	Available June 2014
CURRENTTAXABLE:	Available June 2014
CURRENTNETASSESSED:	Available June 2014
CURRENTMILLEVY:	Available November 2014
PREVIOUSMARKET:	159,437
PREVIOUSACCOUNTADJUSTMENTS:	0
TAXSAVINGS:	\$495
PREVIOUSASSESSED:	13,257
PREVIOUSSTAXABLE:	120,527
PREVIOUSNETASSESSED:	13,257
PREVIOUSMILLEVY:	115.70
LANDVALUE:	63,700
SUBNAME:	MAIN STREET 2ND ADD
SUBNO:	01384
BLOCK:	023
LOT:	000
LEGAL:	LOTS 10 THRU 15
SECTION:	33
TOWNSHIP:	12N
RANGE:	3W
QTR:	SW
QTRQTR:	null
LOCATION:	1012 NW 1ST ST
ACRES:	.4821
WIDTH:	0
DEPTH:	0
TRLINK:	013843500



Legend

Annotation

- Sections
- Streets
- Parcels
- North Canadian River
- Rivers & Creeks
- Lakes
- Aerials (flown Feb 28th - March 23rd, 2011)
- County Background



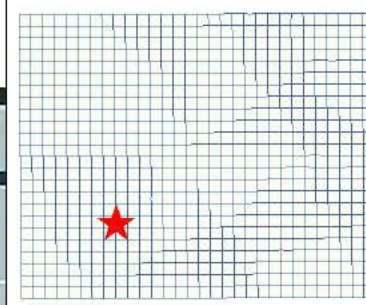
Scale: 1:1,836

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.





Oklahoma County Assessor Online Mapping



Legend

Annotation

- Sections
- Streets
- Parcels
- North Canadian River
- Rivers & Creeks
- Lakes
- Aerials (flown Feb 28th - March 23rd, 2011)
- County Background



Scale: 1:1,836

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.



MISCELLANEOUS RECORD No. 69

One half interest in rigs and machinery, value at \$10,000.00.

Account due from Carter Oil Company, \$10,000.00;

Royalty in Seminole County, \$5,000.00.

It Is Further Decreed that the enumeration of the above property shall not be deemed to limit the rights of said defendant, Louis Sikes to any and all other property not specifically enumerated herein, and it is further adjudged that each party shall be liable for and shall pay their individual debts, and neither shall be liable for the debt of the other.

It Is Further Orderd and Adjudged by the Court that any and all checks written by Maxine Sikes on the account of the defendant, Louis Sikes, and which were turned down and not paid by the bank, and which were issued before the 1st day of November, 1928, shall be paid by the defendant, Louis Sikes, and if the same were paid by the plaintiff, defendant shall pay the same to the plaintiff.

It Is Further Adjudged and Decreed tht an attorneys' fee of \$500.00 for the benefit of plaintiff's attorneys be paid by the defendant, and that the costs of this action assessed at \$- - -, be assessed against the defendant.

Sam Hooker, Judge.

O.K. Everest Dudley & Brewer, Attorneys for Plaintiff.

A. S. Wells, Attorney for Defendant.

State of Oklahoma, Oklahoma County, SS.

I, the undersigned, Court Clerk in and for said County and State, do hereby certify that the instrument hereto attached is a full, true, correct and complete copy of the amended Decree of Divorce in Suit No. 5124-D, Alma Sikes vs Louis Sikes, as the same now appears of record and on file in this office. Witness my hand and official seal at my office in Oklahoma City, Oklahoma, this 17 day of Dec. 1928.

Cliff Myers, Court Clerk, Oklahoma County, Oklahoma.

Filed in District Court, Oklahoma County, Oklahoma Dec. 17, 1928.

(Court Seal)

Cliff Myers, Court Clerk.

By Cliff Myers.

THE REINHART & DONOVAN CO.

LEASE.

to

F. M. Ephland

State of Oklahoma, Oklahoma County, SS,

This instrument was filed for record on Dec. 17, 1928, at 3:09 o'clock P. M., and recorded in Book 69, Page 16.

Fees. \$2.75.

J. W. Berry, County Clerk.

By Price, Deputy.

This Lease, Made this 13th day of December 1928 by and between The Reinhart & Donovan Company, a corporation incorporated under the laws of the State of Oklahoma, party of the first part and F. M. Ephland of Oklahoma City, Oklahoma, party of the second part.

Witnesseth: That the said first party in consideration of the covenants and agreements hereinafter set forth does by these presents demise, lease and let unto the se-

second party the following described property, situated in the County of Oklahoma, State of Oklahoma, to-wit: Lots ten, eleven, twelve and thirteen (10-11-12-13) Block Twenty-three (23) Second main Street Addition to Oklahoma city, Oklahoma, including a one story brick, reinforced concrete and structural steel Laundry Building with second story offices, rest room and dining room, to be constructed on said lots by party of the first part in accordance with plans and specifications as attached hereto. Said construction work to begin at once and to be completed at the earliest possible date. The Party of the first part will put forth its best efforts to complete the building ready for installation of Laundry machinery and equipment by April first, 1929.

To Have and to hold the same to the second party from the 13th day of December 1928, to the first day of April 1949 (Nineteen Hundred and Forty-Nine). And the second party in consideration of the premises herein set forth, agrees to pay the first party as rental for the above described premises the sum of \$470.00/100 (Four hundred Seventy 00/100 Dollars) per month payable each month in advance from the time said Building is completed and ready to receive Laundry Machinery and Equipment until April 1st. (First), 1937 (Nineteen Hundred and Thirty Seven), then the sum of \$600.00/100 (Six hundred 00/100 Dollars) per month payable the first/each month in advance until the expiration of this Lease April 1st. (First) 1949 (Nineteen Hundred and Forty Nine)

It is further agreed that the party of the second part will furnish, install and pay for Laundry Equipment and Machinery required to adequately equip and furnish said building and that the first party shall at all times during the life of this Lease have a first lien on said equipment to guarantee the payment of the above mentioned rent. It is further agreed that said equipment which shall include the steam boilers, electric generators and engines, washing equipment and all other Laundry equipment, all steam piping, water softeners and storage tank, and all other equipment not furnished as part of the building by the first party but furnished by the second party shall cost approximately One Hundred Thousand Dollars (\$100,000.00).

It is further agreed that the party of the first part will complete the building except certain portions of ground floor, and will turn said building over to party of second party ready for the installation of his equipment, and second party shall accept building in this condition and payment of rent shall start from date of such acceptance, when machinery and equipment is installed, party of first part shall then complete the portions of ground floor omitted for setting of Machinery.

It is understood and agreed that ad valorem taxes on the building and grounds will be paid by first party; taxes on all improvements, fixtures and equipment installed or constructed by second party, shall be paid by him and assigns, as well as any and all special assessments now or hereafter levied on said real estate.

It is further agreed that the party of the first part, hereby grants the second party an option to purchase said building and grounds on the following conditions and terms:

(a) Within the first eight years of said lease, for the sum of \$66000 00/100 (Sixty-six Thousand and no/100 Dollars) payable in United States currency for the said building and grounds free and clear of all encumbrances, said second party to assume any mortgage against said lots and building at the time of purchase deducting principal and interest then due from purchase price in making said settlement.

MISCELLANEOUS RECORD No. 69

It Is Further Agreed: That the second party shall not assign this lease or sub-let the premises or any part thereof, without the written consent of the first party. And it is also agreed that upon the failure to pay the rentals or any part thereof as herein provided, or to otherwise comply with the terms and conditions of this Lease by the second party, then the first party may declare this lease at an end and void, and re-enter and take possession of said premises, including Laundry Machinery and equipment as placed therein by second party.

It Is Further Agreed by and between the parties hereto that the party of the second part shall pay for all fuel, electric light and power service, gas and water required for the conducting of the business.

It Is Further Agreed: That at the end of this lease or sooner termination thereof, the second party shall give peaceable possession of the premises to the first party in as good condition as they are now, the usual wear and tear and damage by the elements alone excepted.

And upon the non-payment of the rent, or any part thereof at the time as above specified, said first party may distrain for rent due and declare this lease at an end and void and re-enter and recover possession by forcible entry and detainer.

This lease shall not be considered renewed except by agreement of the parties in writing.

The covenants and agreements of this lease shall extend to and be binding upon the heirs, executors and assigns of the parties hereto.

Witness our hands and seal the day ~~and~~ first above written.

Attest:

Agnes Reinhart, Ass't. Secretary.

(Corporate Seal)

The Reinhart & Donovan Company

By M. J. Reinhart, President, Part.
Party of the First/

F. M. Ephland, Party of the second part

State of Oklahoma, County of Oklahoma, SS.

On this 13th day of December, 1928, before me the undersigned a Notary Public, in and for the county and state aforesaid personally appeared M. J. Reinhart, to me known to be the identical person who subscribed the name of the maker thereof to the foregoing instrument as its President and acknowledged to me that he executed the same as his free and voluntary act and deed, and as the free and voluntary act and deed of such corporation, for the uses and purposes therein set forth.

Given under my hand and seal of office the day and year last above written.

R. S. Marshall, Notary Public.

My commission Expires Nov. 22, 1932.

(Notary Seal)

State of Oklahoma, County of Oklahoma, SS.

On this 13th day of December, 1928 before me the undersigned, a Notary Public, in and for the county and state aforesaid, personally appeared F. M. Ephland, to me known to be the identical person who subscribed the name of the maker thereof to the foregoing instrument and acknowledged to me that he executed the same as his free and voluntary act and deed, for the uses and purposes therein set forth.

Witness my hand and official seal the day and year above set forth.

R. S. Marshall, Notary Public.

My commission expires Nov. 22, 1932.

(Notary Seal)

Oklahoma City, Oklahoma. Dec. 13, 1928.

For value received I hereby assign all my right title and interest in and to the above lease to Mid City Laundry Inc. of Oklahoma City, Oklahoma.

F. M. Ephland

On this 13th day of December, 1928, before me the undersigned, a Notary Public, in and for the county and state aforesaid, personally appeared F. M. Ephland, to me known to be the identical person who subscribed the name of the maker thereof to the foregoing instrument and acknowledged to me that he executed the same as his free and voluntary act and deed, for the uses and purposes therein set forth.

Witness my hand and official seal the day and year above set forth.

R. S. Marshall, Notary Public.

My commission expires Nov. 22, 1932.

(Notary Seal)

The above assignment is hereby accepted this date, December 13th, 1928.

Mid City Laundry Inc.

By J. E. Patterson, President.

We hereby accept the above assignment to the Mid City Laundry Inc., this date December 13th, 1928.

Attest:

The Reinhart & Donovan Co.
By M. J. Reinhart, President.

Agnes Reinhart, Asst. Secretary.

(Corporate Seal)

2.

FINAL DECREE.

County Court

to

Leo Becker,

State of Oklahoma, Oklahoma County, SS.

This instrument was filed for record on Dec. 17, 1928, at 3:15 o'clock P. M., and recorded in Book 69, Page 19.

Fees. \$3.00.

J. E. Berry, County Clerk.

By Price, Deputy.

State of Oklahoma, Oklahoma county, SS.

In the Matter of the Estate of

Bella Becker, deceased.

In The County Court Within And For Said

County And State. Case No. 7563.

ORDER ALLOWING FINAL ACCOUNT, FINAL DECREE AND DISCHARGE.

Now on this the 14th day of December 1928 this matter came regularly on for hearing upon the final account, and petition for distribution and discharge of Dora Kerr, administratrix with the will annexed, and it appearing to the court that due notice of the hearing of this final account and petition for distribution and discharge has been given as required in said order and according to law, the court proceeded to examine the final account of the said Dora Kerr, administratrix with the will annexed, and the vouchers produced by her, and further examined the said Dora Kerr under oath and it appearing that the said Dora Kerr has well and truly accounted for every part of said estate and that

Stationers and Blank Book Makers, Okla. City—19855

interest in and to said leases and rights thereunder, including all rights and interests by virtue of the aforesaid executed copies of said oil and gas mining leases, subject, however, to the terms of a certain agreement made and entered into on the 11th day of April, 1930, by and between E. S. Stahl and Phillips Petroleum Company; casinghead gas contract dated July 23, 1930, by and between E. S. Stahl and Phillips Petroleum Company, working agreement dated July 23, 1930, by and between E. S. Stahl and Phillips Petroleum Company, and contract supplemental thereto between the same parties dated July 23, 1930, supplemental contract between E. S. Stahl and Phillips Petroleum Company, dated January 8th, 1931; agreement between Stahl Petroleum Corporation et al, and Phillips Petroleum Company dated March 16th, 1931; modification of casinghead gas contract dated March 5th, 1932, between Stahl Petroleum Corporation and Phillips Petroleum Company, and agreement between Stahl Petroleum Corporation et al, and Phillips Petroleum Company, dated March 22, 1932;

TO HAVE AND TO HOLD said interest unto the said Colonial Realty & Securities Co. Inc., his heirs and assigns forever, provided, however, that this agreement shall be and become effective on the 1st day of June, 1935, irrespective of the date of its execution.

IT WITNESS WHEREOF, I have hereunto set my hand this 23rd day of May, 1935.

Barney Lubin

State of Oklahoma,)
Oklahoma County) SS.

Before me the undersigned, a Notary Public in and for said County and State, on this 23rd day of May, 1935, personally appeared Barney Lubin, to me known to be the identical person who executed the within and foregoing instrument and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

My Commission Expires: February 23, 1937

Dorothy Postle, Notary Public,

(Notarial Seal)

[illegible]

Agreement

The Reinhart & Donovan Company et al
State of Oklahoma, Oklahoma County, ss.

To

P. O. Denham

This instrument was filed for record on Jun. 5, 1935 at 11:36 A. M., and recorded in Book 279, at Page 429.

Helen Nix, County Clerk

By
00000



Fee \$1.40

Cunningham, Deputy

The Reinhart & Donovan Company, a corporation, party of the first part, Oklahoma City Service Company, a corporation, party of the second part, and George M. Tredway, party of the third part, hereby contract and agree as follows, to-wit;

1. Whereas, party of the first part is the owner of the following described real estate in Oklahoma County, Oklahoma, to-wit:

Lots 10, 11, 12 and 13, in Block 23, Second Main Street Addition to Oklahoma City, Oklahoma, and,

Whereas, second party now occupies the same under a certain written lease executed originally on the 13th day of December 1928, by and between first party and F. M. Ephland, and, whereas, said lease so executed on said day provides that all of the laundry equipment, machinery, steam boilers, electric generators, motors and wiring, engines, washing equipment, steam piping, water softeners, storage tanks, automobiles and laundry trucks, and all other equipment and material of whatsoever nature, whether then in and on said premises or thereafter placed therein and thereon, shall be subject to a first lien in favor of first party to guarantee the payment of the rent on said premises provided for in said leasehold agreement.

2. And, Whereas, third party, George M. Tredway, holds a note secured by chattel mortgage on certain equipment, machinery and material, which said note and mortgage were executed on the 26th day of September 1929, and said mortgage was thereafter filed for record with the County Clerk of said county on October 2nd, 1929, being # K 121302, and covering certain machinery and equipment theretofore located in the National Laundry. And, Whereas, the lien of said first party for said rent is second and junior to the lien of said George M. Tredway on said particular equipment and machinery.

Before me, a Notary Public in and for said County and State, on this 24th day of J personally appeared M.J.Reinhart to me known to be the identical person who subscribed of the maker thereof to the foregoing instrument as its President and acknowledged to executed the same as his free and voluntary act and deed, and as the free and voluntary deed of such corporation for the uses and purposes therein set forth.

In Witness Whereof, I have hereunto set my hand and affixed my official seal on the day and date above written.

My commission expires January 20, 1937 (Notarial seal) Pearl B.Clifton, Notary Publ

#principal
or 支那支那支那支那

MISCELLANEOUS RECORD No. 301

3. And, whereas, second partyproposes to execute a chattel mortgage on all of the property contained in the building located on said premises and known as No. 1000 N.W. First Street. to secure payment of the note of \$5000.00.

4. Now, therefore, the parties hereto specifically recognize that said mortgage to be so executed by said Oklahoma City Service Company in favor of said Nuway Laundry Company is a first mortgage superior to the lien of first party for unpaid rent, and superior to the lien of said George M. Fredway by virtue of his mortgage hereinbefore referred to.

5. The execution of this agreement is one of the inducements to said Nuway Laundry Company, a corporation, to accept said note and mortgage, and it is the intention of the parties here to that said Nuway Laundry Company shall be furnished with a copy hereof.

In witness whereof the said parties have executed this instrument on this 20th day of April, 1935.

Attest:

Agnes Reinhart, Ass't Secretary
(Corporate Seal)

Attest: Prentiss Price
Secretary (Corporate Seal)

Witness to signature of George M.
Tredway.
Vernon Woodward
F.M. Cayon

THE REINHART & DONOVAN COMPANY
a corporation.

By M. J. Reinhart, President
First Party.

OKLAHOMA CITY SERVICE COMPANY,
a Corporation,
By M. J. Reinhart, President
Second Party

George M. Tredway,
Third Party

State of Oklahoma, Oklahoma County, ss

On this 22nd day of April, A.D., 1935, before me, the undersigned, a Notary Public, in and for the county and state aforesaid, personally appeared M. J. Reinhart to me known to be the identical person who signed the name of the maker thereof to the within and foregoing instrument as its President and acknowledged to me that he executed the same as his free and voluntary act and deed, and as the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

Gertie B. Lemon, Notary Public

My commission expires, August 17, 1937 (Notarial Seal)

State of Oklahoma, Oklahoma County, ss

On this 22nd day of April, A.D. 1935, before me, the undersigned, a Notary Public, in and for the county and state aforesaid, personally appeared M. J. Reinhart to me known to be the identical person who signed the name of the maker thereof to the within and foregoing instrument as its President and acknowledged to me that he executed the same as his free and voluntary act and deed, and as the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

Gertie B. Lemon, Notary Public

My commission expires, August 17, 1937 (Notarial Seal)

[illegible]

2 ASSIGNMENT OF OIL AND GAS ROYALTY

ASA LEE MAYES, INC.

to

Harry A. Friedenberg

State of Oklahoma, Oklahoma County, ss

This instrument was filed for record Apr. 22, 1935 at 10:04 A.M. and recorded in Book 301, at Page 447. Fee \$1.25

Fee \$1.25

Helen Nix, County Clerk

By McKinnon, Deputy

0000000000000000

PROOF READ
By Mott
To Barker

WARRANTY DEED RECORD No. 359

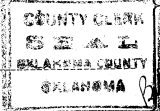
12.

FROM

W. Combs Hughes, et ux

TO

M. J. Reinhart



STATE OF OKLAHOMA, OKLAHOMA COUNTY, ss:

This instrument was filed for record on the 15 day
of Dec., 1928, at 11:56 o'clock A. M.,
and duly recorded in Book 359 of Deeds on Page 420.
Fees, \$ 1.00

J. W. Berry

County Clerk.

By Price

Deputy.

KNOW ALL MEN BY THESE PRESENTS:

That W. Combs Hughes and Maud Hughes, husband and wife,
of Oklahoma City,
of Oklahoma County, State of Oklahoma, part ies of the first part in consideration of the sum of One and no/100 (\$1.00) and other valuable consideration DOLLARS
in hand paid, the receipt of which is hereby acknowledged, does hereby grant, bargain, sell and convey unto
M. J. Reinhart
of Oklahoma County, State of Oklahoma part of of the second
part, the following described real property and premises situate
in Oklahoma County, State of Oklahoma, to-wit:

Lots Ten (10), Eleven (11) and the East Half (E $\frac{1}{2}$) of Lot Twelve (12), in
Block Twenty-three (23) in Second Main Street Addition to Oklahoma, City,
Oklahoma, according to the recorded plat thereof,

together with all the improvements thereon and the appurtenances there unto belonging, and
warrant the title to the same.

TO HAVE AND TO HOLD Said described premises unto the said part of of the second part, his heirs and assigns.
forever, free, clear and discharged of and from all former grants, charges, taxes, judgments, mortgages and
other liens, and encumbrances of whatsoever nature.

Except the taxes for the year 1928 which are to be paid by the second party,

Signed and delivered this 10th day of October, 1928.

W. Combs Hughes,

Maud Hughes

Minnesota
STATE OF ~~MINNESOTA~~ Olmsted COUNTY, ss:

Before me the undersigned, a Notary Public in and for said County and State,
on this 10th day of October, 1928, personally appeared
Maud Hughes, wife of W. Combs Hughes

and
to me known to be the identical person who executed the within and foregoing instrument, and acknowledged to me that she executed
the same as her free and voluntary act and deed for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.
March 3, 1932.

My commission expires

Paul A. Grassie

Notary Public.

~~XXXXXXXXXX~~ (Notarial Seal)

(Signed) Nona B. Sprague, Notary Public

My commission expires April 29, 1939

ENDORSEMENTS:

State of Oklahoma, Oklahoma County, ss:

I, Cliff Myers, Court Clerk, within and for the State and County, aforesaid, do hereby certify that the above and foregoing is a full, true correct and complete copy of Report of Commissioners in the above entitled cause as fully as the same appears of record and on file in my office.

Witness my hand as Clerk and Official seal this 24th day of July, 1936.

Cliff Myers, Court Clerk

By Carl C. Phelps, Deputy.

(Official seal)

[illegible]

The Reinhart & Donovan Company

TO

Kansas City Life Insurance
Company

State of Oklahoma, Oklahoma County, ss:

This instrument was filed for record Jul 24, 1936, at 4:05 P. M. and recorded in Book 372, at Page 162. Fee \$1.00

~~Fee \$1.00~~

Helen Nix, County Clerk

By McKinnon, Deputy.

State of Oklahoma, County of Oklahoma, ss:

KNOW ALL MEN BY THESE PRESENTS; That

WHEREAS, on the 13th day of December, 1928, The Behnhart & Donovan Company, a Corporation of the State of Oklahoma, entered into a lease contract with F. M. Ephland of Oklahoma City, Oklahoma, covering the following described property situated in the County of Oklahoma, State of Oklahoma, to wit: Lots 10, 11, 12, and 13, Block 23, Second Main Street Addition to Oklahoma City, Oklahoma, said lease recorded in Book 69, Page 16, Records of Oklahoma County, Oklahoma, and

WHEREAS, the interest of F. M. Ephland has been assigned to the Oklahoma City Service Company, a corporation, and

WHEREAS, on May 17, 1929 an additional contract was entered into between The Reinhart & Donovan Company, a Corporation, and the Oklahoma City Service Company, said contract recorded in Book 76, Page 365, Records of Oklahoma County, Oklahoma, and

WHEREAS, Kansas City Life Insurance Company has made a loan of \$20,000.00 on the above property;

NOW, THEREFORE, in consideration of \$1.00 and for the purpose of furnishing additional and collateral security to said loan. The Reinhart & Donovan Company does hereby assign to Kansas City Life Insurance Company, its successors or assigns, all its right and benefits accruing under said lease. This assignment to terminate and become void upon the release of the mortgage securing said indebtedness, it being understood, however, that Kansas City Life Insurance Company, its successors and assigns, shall be chargeable with no responsibility with reference to such rights and benefits nor be accountable therefore, except as to sums actually collected by it or them, and that the lessee in said lease shall account for said rights or benefits to the Reinhart & Donovan Company until notified by the Kansas City Life

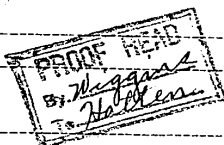
8

FROM

M. J. Reinhart

TO

Reinhart & nonovan Co.



STATE OF OKLAHOMA, OKLAHOMA COUNTY, ss:

This instrument was filed for record on the 16 day of

May 1931 at 11:52 o'clock A. M. Fees \$1.00

and duly recorded in Book 409 of Deeds on page 539

B. E. Corrigan By: McKinnon

County Clerk.

Deputy.

KNOW ALL MEN BY THESE PRESENTS:

That M. J. Reinhart

of Oklahoma City, Oklahoma County, State of Oklahoma, party of the first part, in consideration of the sum of One and no/100 (\$1.00) and other valuable consideration DOLLARS

in hand paid, the receipt of which is hereby acknowledged, do hereby grant, bargain, sell and convey unto

The Reinhart & nonovan Company, a corporation

of Oklahoma County, State of Oklahoma, part of the second part,

the following described real property and premises situated in Oklahoma County, State of Oklahoma, to-wit:

Lots ten (10), eleven (11), twelve (12), and thirteen (13) in block twenty three (23) Second Main Street Addition, to Oklahoma City, Oklahoma, according to the recorded plat thereof

together with all the improvements thereon and appurtenances thereon belonging, and warrant the title to the same.

TO HAVE AND TO HOLD said described premises unto the said part of the second part, its heirs and assigns

forever, free, clear and discharged of and from all former grants, charges, taxes, judgments, mortgages and other liens, and incumbrances of whatsoever nature.

The Grantor warrants that the above described property is not now and never has been his homestead.

Signed and delivered this 24th day of December 1928, xxx

M. J. Reinhart

STATE OF OKLAHOMA, Oklahoma COUNTY, ss:

Before me, R. S. Marshall, a Notary Public in and for said County and State,

on this 26th day of December, 1928, xxx, personally appeared

M. J. Reinhart

to me known to be the identical person who executed the within and foregoing instrument, and acknowledged to me that he executed the same as his free and voluntary act and deed for the uses and purposes therein set forth.

Witness my hand and official seal the day and year last above set forth.

My Commission expires Nov. 22, 1932

R. S. Marshall

Notary Public.

(Notarial seal)

54997
WARRANTY DEED

KNOW ALL MEN BY THESE PRESENTS:

That The Reinhart & Donovan Company, a corporation, party of the first part, in consideration of the sum of Ten Dollars and other valuable considerations to it in hand paid, the receipt of which is hereby acknowledged does hereby grant, bargain, sell and convey unto:

Theresa H. Dolan	1/4
Agnes M. Reinhart	1/4
Mary B. Reinhart	1/4
Oran Buck	1/20
Jane Thompson	1/20
Robert Buck	1/20
Margaret Buck Sanders	1/20
Norman Thompson as Trustee for Martin Buck	1/20

parties of the second part, the following described real property and premises situate in Oklahoma County, State of Oklahoma, to-wit:

Lots Ten (10) through Fifteen (15), both inclusive, in Block Twenty-three (23), SECOND MAIN STREET ADDITION to Oklahoma City, Oklahoma, according to the recorded plat thereof

together with the improvements thereon and the appurtenances thereunto belonging, and warrant the title to the same.

TO HAVE AND TO HOLD said described premises unto the said parties of the second part, their heirs and assigns forever, free, clear and discharged of and from all former grants, charges, taxes, judgments, mortgages, and other liens and incumbrances of whatsoever nature.

Signed and delivered this 15th day of September, 1967.

THE REINHART & DONOVAN COMPANY

By John A. Reinhart
Vice President

ATTEST:

June Battger
Secretary

STATE OF OKLAHOMA)
COUNTY OF OKLAHOMA) SS:

On this 15th day of September, 1967, before me, a Notary Public in and for the said County and State, personally appeared John A. Reinhart to me known to be the identical person who signed the name Vice of the maker thereof to the within and foregoing instrument as its President and acknowledged to me that he executed the same as his free and voluntary act and deed, and as the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

June Battger
Notary Public

My Commission Expires:

SEP 15, 1969

STATE OF OKLAHOMA, OKLAHOMA COUNTY, SS: THIS INSTRUMENT WAS FILED FOR RECORD ON PAGE 9

THE 6 DAY OF Oct., 1967, AT 1:15 O'CLOCK P.M. AND DULY RECORDED.

JOE MATTOX, COUNTY CLERK

FEB 24 BY Shab

DEPUTY. 7

WARRANTY DEED

KNOW ALL MEN BY THESE PRESENTS:

That THERESA H. DOLAN and RAY DOLAN, wife and husband; AGNES M. REINHART, a single woman, by MARY B. REINHART, her Attorney-In-Fact; MARY B. REINHART, a single woman; ORAN BUCK and JOAN BUCK, husband and wife; JANE THOMPSON and NORMAN THOMPSON, wife and husband; ROBERT BUCK and ANN BUCK, husband and wife; MARGARET BUCK SANDERS and JAY CARL SANDERS, wife and husband; and NORMAN THOMPSON, as Trustee for MARTIN BUCK, parties of the first part, in consideration of the sum of Ten Dollars and other valuable considerations to them in hand paid, the receipt of which is hereby acknowledged, do hereby grant, bargain, sell and convey unto THE LIBERTY NATIONAL BANK & TRUST COMPANY OF OKLAHOMA CITY, party of the second part, the following described real property and premises situate in Oklahoma County, State of Oklahoma, to-wit:

Lots Ten (10) through Fifteen (15), both inclusive, in Block Twenty-three (23), SECOND MAIN STREET ADDITION to Oklahoma City, Oklahoma, according to the recorded plat thereof.

together with the improvements thereon and the appurtenances thereto, including, and warrant the title to the same.

TO HAVE AND TO HOLD said described premises unto the said party of the second part, its successors and assigns, forever, free, clear and discharged of and from all former grants, charges, taxes, judgments, mortgages, and other liens and encumbrances of whatsoever nature.

Signed and delivered this 10th day of October, 1967.

Theresa H. Dolan
Theresa H. Dolan

Ray Dolan
Ray Dolan

Agnes M. Reinhart by Mary B. Reinhart Attorney in fact
Agnes M. Reinhart

Mary B. Reinhart
Mary B. Reinhart

Oran Buck
Oran Buck

Joan Buck
Joan Buck

Jane Thompson
Jane Thompson

Norman Thompson
Norman Thompson

Robert Buck
Robert Buck

Ann Buck
Ann Buck

Margaret Buck Sanders
Margaret Buck Sanders

Jay Carl Sanders
Jay Carl Sanders

Norman Thompson
Norman Thompson as Trustee
for Martin Buck

STATE OF OKLAHOMA)

) SS:

OKLAHOMA COUNTY)

Before me, the undersigned, a Notary Public in and for said County and State, on this 10th day of October, 1967, personally appeared Theresa H. Dolan and Ray Dolan, wife and husband; Agnes M. Reinhart, a single woman, by Mary B. Reinhart, her Attorney-In-Fact; and Mary B. Reinhart, a single woman, to me known to be the identical persons who executed the within and foregoing instrument and acknowledged to me that they executed the same as their free and voluntary act and deed for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

Charlotte A. Hellman
Notary Public.

My Commission Expires:

May 9, 1970

STATE OF OKLAHOMA)

) SS:

OKLAHOMA COUNTY)

Before me, the undersigned, a Notary Public in and for said County and State, on this 10th day of October, 1967, personally appeared Oran Buck and Joan Buck, husband and wife; Jane Thompson and Norman Thompson, wife and husband; Robert Buck and Ann Buck, husband and wife; Margaret Buck Sanders and Jay Carl Sanders, wife and husband; and Norman Thompson, as Trustee for Martin Buck, to me known to be the identical persons who executed the within and foregoing instrument and acknowledged to me that they executed the same as their free and voluntary act and deed for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

Charlotte A. Hellman
Notary Public

My Commission Expires:

May 9, 1970

STATE OF OKLAHOMA, OKLAHOMA COUNTY, SS: THIS INSTRUMENT WAS FILED FOR RECORD ON PAGE 771THE 23 DAY OF Oct, 1967, AT 1:47 O'CLOCK P M. AND DULY RECORDED.

JOE MATTOX, COUNTY CLERK

FEE 3.20 BYHaleDEPUTY. N

BOOK 3835 PAGE 144
WARRANTY DEED
 SPECIAL FORM

This Space Reserved for Filing Stamp

Know All Men by These Presents:

That The Liberty National Bank and Trust Company

of Oklahoma City, Oklahoma

part y of the first part, in consideration of the sum of

Ten and no/100 (\$10.00) ----- DOLLARS

in hand paid, the receipt of which is hereby acknowledged, does hereby Grant, Bargain, Sell and Convey unto Kenneth W. Cassil and Carolyn June Cassil, husband and wife, as joint tenants and not as tenants in common

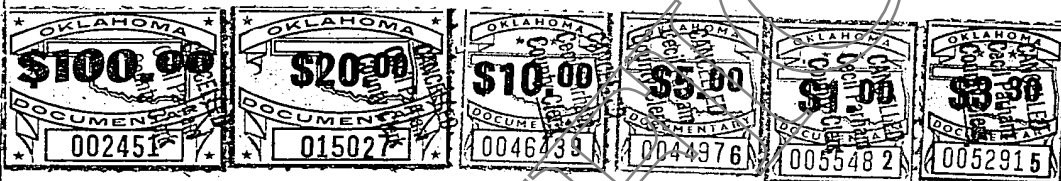
/ of Oklahoma County, State of Oklahoma, part ies

of the second part, the following described real property and premises situate in Oklahoma

County, State of Oklahoma, to-wit:

Lots Ten (10) through Fifteen (15), both inclusive, in Block Twenty-three (23), SECOND MAIN STREET ADDITION to Oklahoma City, Oklahoma, according to the recorded plat thereof,

less and except easements of record; rights-of-way of record; previous mineral conveyances of record,



together with all the improvements thereon and the appurtenances thereto belonging, and warrant the title to the same to be free, clear and discharged of and from all former grants, charges, taxes, judgments, mortgages and other liens and incumbrances of whatsoever nature made or suffered to be made by the party of the first part.

TO HAVE AND TO HOLD said described premises unto the said part y of the second part, the heirs and assigns forever.

Signed and delivered this 1st day of March, 19 69

ATTEST:

Charles E. Evans
 Asst Secretary

THE LIBERTY NATIONAL BANK & TRUST COMPANY

By Kenneth R. Brown
 Vice-President

STATE OF OKLAHOMA
 COUNTY OF _____

SS:

INDIVIDUAL ACKNOWLEDGMENT
 Oklahoma Form

Before me, the undersigned, a Notary Public in and for said County and State on this _____ day of _____, 19____, personally appeared _____

to me known to be the identical person who executed the within and foregoing instrument and acknowledged to me that _____ executed the same as _____ free and voluntary act and deed for the uses and purposes therein set forth. Given under my hand and seal the day and year last above written.

My commission expires _____ Notary Public.

INDIVIDUAL ACKNOWLEDGMENT

(Oklahoma Form)

STATE OF _____ County of _____, ss:

Before me the undersigned, a Notary Public, in and for said County and State, on this _____ day of _____, 19____, personally appeared _____ to me known to be the identical person _____ who executed the within and foregoing instrument and acknowledged to me that _____ executed the same as _____ free and voluntary act and deed for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

My commission expires _____ Notary Public

INDIVIDUAL ACKNOWLEDGMENT

(Oklahoma Form)

STATE OF _____ County of _____, ss:

Before me the undersigned, a Notary Public, in and for said County and State, on this _____ day of _____, 19____, personally appeared _____ to me known to be the identical person _____ who executed the within and foregoing instrument and acknowledged to me that _____ executed the same as _____ free and voluntary act and deed for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

My commission expires _____ Notary Public

CORPORATION ACKNOWLEDGMENT

(Oklahoma Form)

STATE OF OKLAHOMA County of OKLAHOMA, ss:On this 1st day of March, A.D., 19 69, before me, the undersigned, a Notary Public

in and for the county and state aforesaid, personally appeared Kenneth R. Bremer to me known to be the identical person who signed the name of the maker thereof to the within and foregoing instrument as its Vice President and acknowledged to me that he executed the same as his free and voluntary act and deed, and as the free and voluntary act and deed of said corporation, for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

My commission expires Feb 19, 1970 Kenneth R. Bremer Notary Public
When instrument is executed by a corporation, the corporate name must be shown and instrument signed by its President or Vice-President and attested by its Secretary or Assistant Secretary and the Corporate Seal affixed.

FORM NO. 204-AF (ORDER BY NUMBER)	WARRANTY DEED SPECIAL FORM	FROM	TO	STATE OF _____ (ss. County)	This instrument was filed for record on the _____ day of _____, 19____, at _____ o'clock _____ M., and recorded in Book _____ of _____ at page _____ Fee \$ _____	County Clerk.	Deputy.	RETURN TO <u>Harry B. Barril</u> <u>315 N. W. 8th</u> <u>Oklahoma City, Okla.</u> <u>73102</u>

NOTARY ACKNOWLEDGMENT of SIGNATURE BY MARK

(Oklahoma Form)

STATE OF _____ County of _____, ss:

Before me, _____, a Notary Public in and for said County and State on this _____ day of _____, 19____, personally appeared _____

to me known to be the identical person _____ who executed the within and foregoing instrument by _____ mark in my presence and in the presence of _____

as witnesses and acknowledged to me that _____ executed the same as _____ free and voluntary act and deed for the uses and purposes therein set forth.

In Witness Whereof, I have hereunto set my hand and official seal the day and year last above written.

My commission expires _____ Notary Public

NOTE—The signature by mark of a lessor who cannot write his name must be witnessed by two witnesses, one of whom must write lessor's name.

112965

QUIT CLAIM DEED

(INDIVIDUAL)

BOOK 4832 PG 58

KNOW ALL MEN BY THESE PRESENTS:

That KENNETH W. CASSIL, former husband of CAROLYN J. CASSIL

part Y of the first part,
 in consideration of the sum of Ten and 00/100 (\$10.00) dollars,
 and other valuable considerations, in hand paid, the receipt of which is hereby acknowledged, do CS hereby quit-
 claim, grant, bargain, sell and convey unto CAROLYN J. CASSIL

part Y of the second part, all his right, title, interest, estate, and every claim and demand, both at
 law and in equity, in and to all the following described real property and premises situate in
Oklahoma County, State of Oklahoma, to-wit:

Lots 10 through 15, both inclusive, in Block 23, Second
 Main Street Addition to Oklahoma City, Oklahoma,
 according to the recorded plat thereof, less and except
 easements of record; rights-of-way of record; previous
 mineral conveyances of record.

(Consideration less than \$100.00)

Deed granted pursuant to Oklahoma County Divorce Decree #JFD-81-5425.)

together with all the improvements thereon and the appurtenances thereunto belonging.

To Have and to Hold the above described premises unto the said part Y of the second part, her
 heirs and assigns forever.

Signed and delivered this 30 day of July, 1981

Kenneth W. Cassil
 KENNETH W. CASSIL

TO:
Carolyn Cassil
 ADDRESS 3801 NW 42nd
 CITY & STATE OKC OK

STATE OF OKLAHOMA

COUNTY OF Oklahoma

SS:

INDIVIDUAL ACKNOWLEDGMENT
Oklahoma Form

Before me, the undersigned, a Notary Public, in and for said County and State on this 30 day of
July, 1981, personally appeared, KENNETH W. CASSIL, former husband of

CAROLYN J. CASSIL

to me known to be the identical person who executed the within and foregoing instrument and acknowledged to me
 that she executed the same as her free and voluntary act and deed for the uses and purposes therein set forth.

Given under my hand and seal the day and year last above written.

My commission expires 3-10-85

Daniel K. [Signature]
 Notary Public

NOTE—This form is supplied by the TITLE GUARANTY DEPARTMENT of AMERICAN-FIRST TITLE & TRUST CO., Oklahoma City, for
 the convenience of ATTORNEYS. No legal instrument or form should ever be prepared by anyone other than an Attorney.

APT&T-G-36

99#06
 12-17-81

STATE OF OKLAHOMA
 DEED RECORDED
 10/17 9 18 AM '81
 OKLAHOMA COUNTY

(ORDER BY NUMBER)

QUIT CLAIM DEED

INDIVIDUAL FORM

This Space Reserved for Filing Stamp

BOOK 5891 PAGE 0408

THIS INDENTURE, Made this 1st day of February, A. D. 1989
between Carolyn June Cassil aka Carolyn J. Cassil, a single
person,
party of the first part,
and Tom G. Brownlee
party of the second part,
Witnesseth, that said part y of the first part, in consideration of the sum of
(\$10.00) Ten DOLLARS

DOC NUMBER 00028973
TIME 11:50 AM
FEE 8.00
DATE MAR. 21 1989
RALPH HESS
OKLAHOMA COUNTY CLERK
RECORDED AND FILED

to him in hand paid, the receipt of which is hereby acknowledged, do es hereby quitclaim, grant, bargain,
sell and convey unto the said part y of the second part all her right, title, interest, estate, and every
claim and demand, both at law and in equity, in and to all the following described property situate in
Oklahoma County, State of Oklahoma, to-wit:

Lots 10 through 15, both inclusive, in Block 23, Second
Main Street Addition to Oklahoma City, Oklahoma, according
to the recorded plat thereof, less and except easements of
record; rights-of-way of record; previous mineral conveyances
of record.

Subject to Judgment Liens now held by Tom G. Brownlee,
recorded in Books 5410, Page 535, Book 5574, Page 1526,
Book 5620, Page 1135, and Book 5704, Page 636, which
judgment liens shall not be deemed to be released by
Grantee by merger, or otherwise by acceptance of this
deed.

(the consideration for this deed is less than \$100.00)
together with all and singular the hereditaments and appurtenances thereunto belonging.

To Have and to Hold the above described premises unto the said
party of the second part

his heirs and assigns forever, so that neither him, the said party
of the second part

nor any person in his name and behalf, shall or will hereafter claim or demand any right or title to the said prem-
ises or any part thereof; but they and everyone of them shall by these presents be excluded and forever barred.

In Witness Whereof, the said part y of the first part has her hereunto set her hand
the day and year first above written.

Carolyn June Cassil

Tax Address:

Tom G. Brownlee
2600 Trout Creek Rd.
Edmond, OK 73034

STATE OF OKLAHOMA
COUNTY OF Oklahoma

SS:

INDIVIDUAL ACKNOWLEDGMENT
Oklahoma Form

Before me, the undersigned, a Notary Public in and for said County and State on this 1st day of
February, 1989, personally appeared Carolyn June Cassil aka Carolyn J.

Cassil
to me known to be the identical person who executed the within and foregoing instrument and acknowledged to me
that she executed the same her free and voluntary act and deed for the uses and purposes therein set forth.
Given under my hand and seal the day and year last above written.

My commission expires July 15, 1992 Henry L. Cassil Notary Public.

NOTICE OF UNSECURED BUILDING(S) AND LIEN

NOTICE is hereby given to any and all interested persons that The City of Oklahoma City, Oklahoma, a municipal corporation, pursuant to authority granted by Section 22-112.1C of Title 11 of the Oklahoma Statutes, as amended, has by Resolution of the Council of The City determined that the structure(s) located upon the real properties listed below were unsecured and that the boarding and securing thereof would make such structure(s) less available for transient occupation, decrease a fire hazard created by such structure(s), or decrease the hazard that such structure(s) would constitute an attractive nuisance to children. Pursuant to the provisions of the above cited statute, said unsecured structure(s) has/have been ordered by the Council of The City of Oklahoma City to be boarded and secured.

NOTICE is further given that if such boarding and securing is performed by The City of Oklahoma City, the costs of such boarding and securing to the City shall be certified to the County Treasurer and become a lien in the nature of a tax lien against the said real properties if not paid by said property owners. If certified to the County Treasurer, said costs shall be levied on the respective properties and collected by the County Treasurer as are other taxes authorized by law. The cost and the interest thereon shall be a lien against the property from the date this notice of the lien is filed with the county clerk. Said lien shall be coequal with the lien of ad valorem taxes and all other taxes and special assessments and shall be prior and superior to all other titles and liens against the property. The lien shall continue until the cost is fully paid. Furthermore, at any time prior to collection by the County Treasurer as provided for above, The City may pursue any civil remedy for collection of the amount owing and interest thereon, including foreclosure of such lien in District Court.

NOTICE is further given that purchase of the real properties listed below should not be concluded after this date without making due inquiry of the Office of the City Clerk of The City of Oklahoma City to ascertain whether The City is claiming any costs against said real properties for boarding and securing of said unsecured structure(s).

LEGAL DESCRIPTION OF REAL PROPERTIES AND DATE OF COUNCIL RESOLUTION:

- | | |
|---|--|
| 1. W85FT Lots 13 & 14, Block 12, Schillings Addition
2500 S. Central
(house) | Council Item Number VI.F.
September 5, 1989
DOC NUMBER 00092936
TIME 10:38 AM |
| 2. Lots 15 & 16, Block 12, Schillings Addition
2504 S. Central
(house) | Council Item Number VI.F. 12.00
September 5, 1989
DATE SEP. 11 1989
RALPH HESS
OKLAHOMA COUNTY CLERK
RECORDED AND FILED |
| 3. Lot 31, Block 7, Days Garden Addition
1917 N. Cherry
(house) | Council Item Number VI.F.
September 5, 1989 |
| 4. Lot 32, Block 7, Days Garden Addition
1921 N. Cherry
(house) | Council Item Number VI.F.
September 5, 1989 |
| 5. Lot 11, Block 10, Roberts South Highland Sec 2
5204 S. Dimple Dr
(house & shed) | Council Item Number VI.F.
September 5, 1989 |
| 6. Lot 13, Block 13, Ingleside Addition
2800 N. Independence
aka 2808 N. Independence
(two structures) | Council Item Number VI.F.
September 5, 1989 |
| 7. Lot 98, Block 0, Green Pastures Addition
4501 N. Onyx
(house and two sheds) | Council Item Number VI.F.
September 5, 1989 |
| 8. Lot 12, Block 26, Altamere Addition
3520 Youngs Blvd
(house) | Council Item Number VI.F.
September 5, 1989 |
| 9. Lots 10 Thru 13, Block 23, Main Street 2nd Addition
1000-04 NW 1st
(two story commercial bldg) | Council Item Number VI.F.
September 5, 1989 |

10. PT NW4 SEC 33 12N 4W BEG 808.4FT W OF NE/C SD NW4 TH S369FT W180FT N369FT E180FT TO BEG SUBJ TO EASEMENTS OF RECORD
6708-16 NW 10th
(four structures)
Council Item Number VI.F.
September 5, 1989
11. Lots 11 & 12, Block 10, Delmar Heights Addition
1420 SW 11th
(house and shed)
Council Item Number VI.F.
September 5, 1989
12. BEG AT A PT ON LINE OF LOT 3 A DIST OF 25FT NW OF NE/C THERE OF SW ON STRAIGHT LINE TO PT ON S LINE OF LOT 3 15FT W OF SE/C THEREOF TH W ALONG S LINE OF LOTS 2 & 3 A DIST 40FT TO PT 30FT W OF SE/C OF LOT 2 TH NE TO NE/C LOT 2 TH E & SE ALONG N LINE LOT 3 94.5FT TO BEG, Block B, Shartel Boulevard
3040 NW 12th
(house only)
Council Item Number VI.F.
September 5, 1989
13. Lot 1, Block 1, Morningside Addition
1840 SW 15th
(garage and shed)
Council Item Number VI.F.
September 5, 1989
14. BEG SW/C LOT 29 BLK 6 N135FT W60FT S135FT E60FT TO BEG OR TR 5 PT OF LAND AVE VACATED, Block 0, Industrial Blvd Repl
3147 SW 20th
(house)
Council Item Number VI.F.
September 5, 1989
15. W50FT Lot 4, Block 17, Jefferson Park Addition
207 NW 27th
(house and garage)
Council Item Number VI.F.
September 5, 1989
16. Lot 15, Block 1, Lyon Sub Addition
1931 NE 27th
(house)
Council Item Number VI.F.
September 5, 1989
17. Lots 35 & 36, Block 29, Schillings Addition
333 SE 28th
(house)
Council Item Number VI.F.
September 5, 1989
18. Lot 2, Block 19, Altamere Addition
2304 SW 32nd
(house only)
Council Item Number VI.F.
September 5, 1989
19. Lot 3, Block 19, Altamere Addition
2308 SW 32nd
(house and open cellar)
Council Item Number VI.F.
September 5, 1989
20. Lots 3 Thru 7, Block 0, R L Odums Industrial Park
3801 S. I-35
(motel, shed & swimming pool)
Council Item Number VI.F.
September 5, 1989
21. Lot 19 Thru 28 & W2FT of Lot 29, Block 28, Oliver Park Addition
225 SW 35th
(nursing home)
Council Item Number VI.F.
September 5, 1989
22. Lots 43 & 44, Block 6, Sherwood Park Addition
2709 SW 35th
(front and rear house)
Council Item Number VI.F.
September 5, 1989
23. Lots 41 & 42, Block 6, Sherwood Park Addition
2713 SW 35th
(house)
Council Item Number VI.F.
September 5, 1989
24. Lots 13 & 14, Block 3, Draper Park Addition
226 SW 36th
(house and garage)
Council Item Number VI.F.
September 5, 1989
25. Lot 17, Block 29, Altamere Addition
2427 SW 36th
(house)
Council Item Number VI.F.
September 5, 1989

THE CITY OF OKLAHOMA CITY.
DEPT. OF ENVIRONMENTAL SERVICES
KAY BUZZELL
200 N. WALKER
OKLAHOMA CITY, OK 73102

BOOK 5955 PAGE 1676

26. W5FT OF LOT 2 & E52FT OF LOT 3, Block 18, Park Estates Addition
1411 NE 37th
(house) Council Item Number VI.F.
September 5, 1989
27. Lot 17, Block 3, Langley Heights
1029 SE 41st
(house, garage and shed) Council Item Number VI.F.
September 5, 1989
28. Lots 39 & 40, Block 14, Moore Heights Addition
2317 SW 48th
(house) Council Item Number VI.F.
September 5, 1989
29. Lot 19, Block 39, Oakcliff Sec 13
3601 SE 57th
(house) Council Item Number VI.F.
September 5, 1989
30. E22.5FT LOT 32 & ALL LOT 33 & W7.5FT LOT 34, Block 20, North Highland
Addition
109 NW 82nd
(house) Council Item Number VI.F.
September 5, 1989
31. Lots 4 & 5, Block 22, North Highland Addition
208 NW 82nd
(house) Council Item Number VI.F.
September 5, 1989

Dated this 8th day of September, 1989.

Thomas P. Hurley
Thomas P. Hurley
City Clerk

Before me, the undersigned, a Notary Public in and for said County and
State of this 8th day of September, 1989, personally appeared
Thomas P. Hurley, to me known to be the City Clerk of Oklahoma City, who
executed the within and foregoing instrument and acknowledged to me that he
executed the same as his free and voluntary act and deed for the use and purpose
set forth. Given under my hand and seal the day and year last above written.

Daniel A. Wiggins
Notary Public

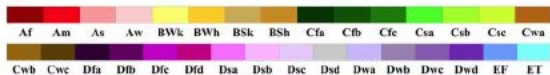
My commission expires:

11-28-92

Reference 4, Koopen-Geiger climate classification map

Main Köppen-Geiger Climate Classes for US counties

updated with CRU TS 2.1 temperature and VASCLIM v1.1 precipitation data 1951 to 2009



Main climates

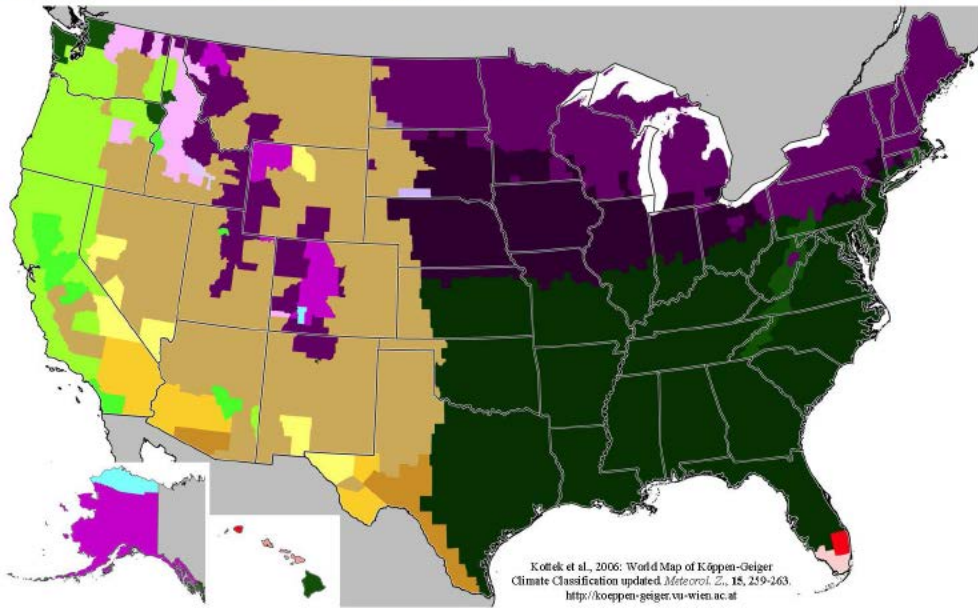
A: equatorial
B: arid
C: warm temperate
D: snow
E: polar

Precipitation

W: desert
S: steppe
f: fully humid
s: summer dry
w: winter dry
m: monsoonal

Temperature

h: hot arid F: polar
k: cold arid T: polar
a: hot summer
b: warm summer
c: cool summer
d: extremely continental



Kottek et al., 2006: World Map of Köppen-Geiger
Climate Classification updated. *Meteorol. Z.*, **15**, 249-263.
<http://koeppen-geiger.vu-wien.ac.at>

Reference 5, Central Oklahoma Precipitation and Wind



OKLAHOMA CLIMATOLOGICAL SURVEY

WWW.OCS.OU.EDU

TEMPERATURE

Average Annual: 61 degrees

Average Maximum: 72 degrees

Average Minimum: 49 degrees

Highest: 110 degrees

(Lake Overholser, July 8, 1970)

Lowest: -17 degrees

(Edmond, February 12, 1899)

Days of 90 Degrees or Higher: 75

Days of 20 Degrees or Lower: 22

PRECIPITATION

Average Annual: 36.21 inches

Days With Precipitation: 72

Wettest Year: 48.11 inches in 1973

Driest Year: 15.15 inches in 1954

Greatest Daily Rainfall: 7.69 inches

(Oklahoma City, May 19, 1955)

OTHER FACTS

Average Wind Speed: 7 mph

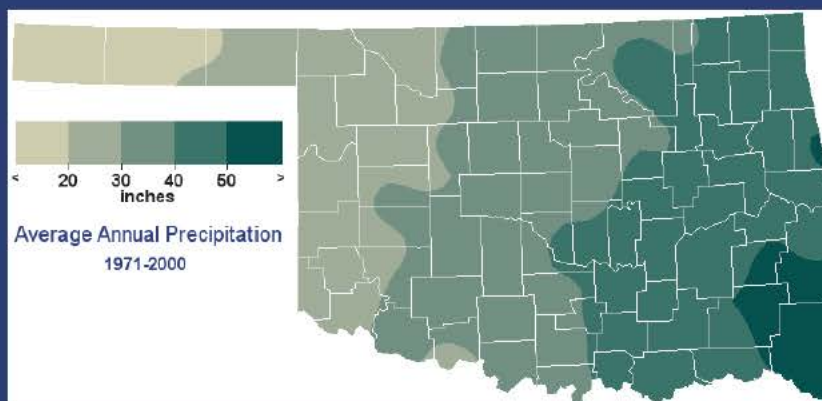
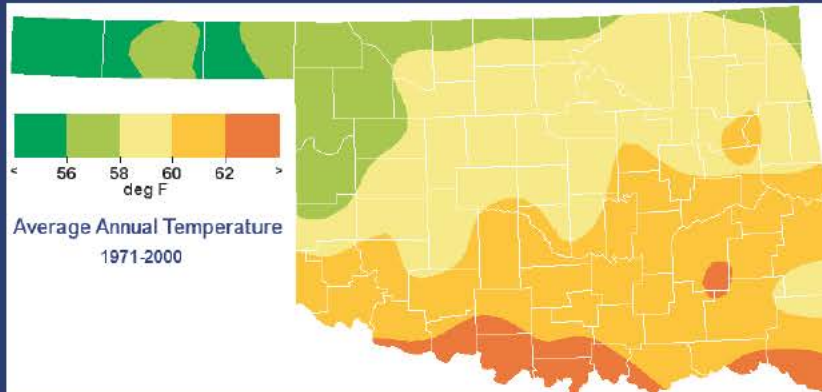
Sunshine: 55- 80%

Average Humidity: 67%

Thunderstorm Days: 49

Hail Events: 4 per year

Tornadoes (1950-2003): 86



WINTER WEATHER

Average Annual Snowfall: 7.0 inches

Days with snow on ground: 4

Greatest Seasonal Snowfall: 24.6 inches (1967-1968)

Greatest Daily Snowfall: 8.4 inches

(Oklahoma City, March 10, 1948)

Last Freeze in Spring: April 4

First Freeze in Autumn: November 1

Growing Season: 211 Days

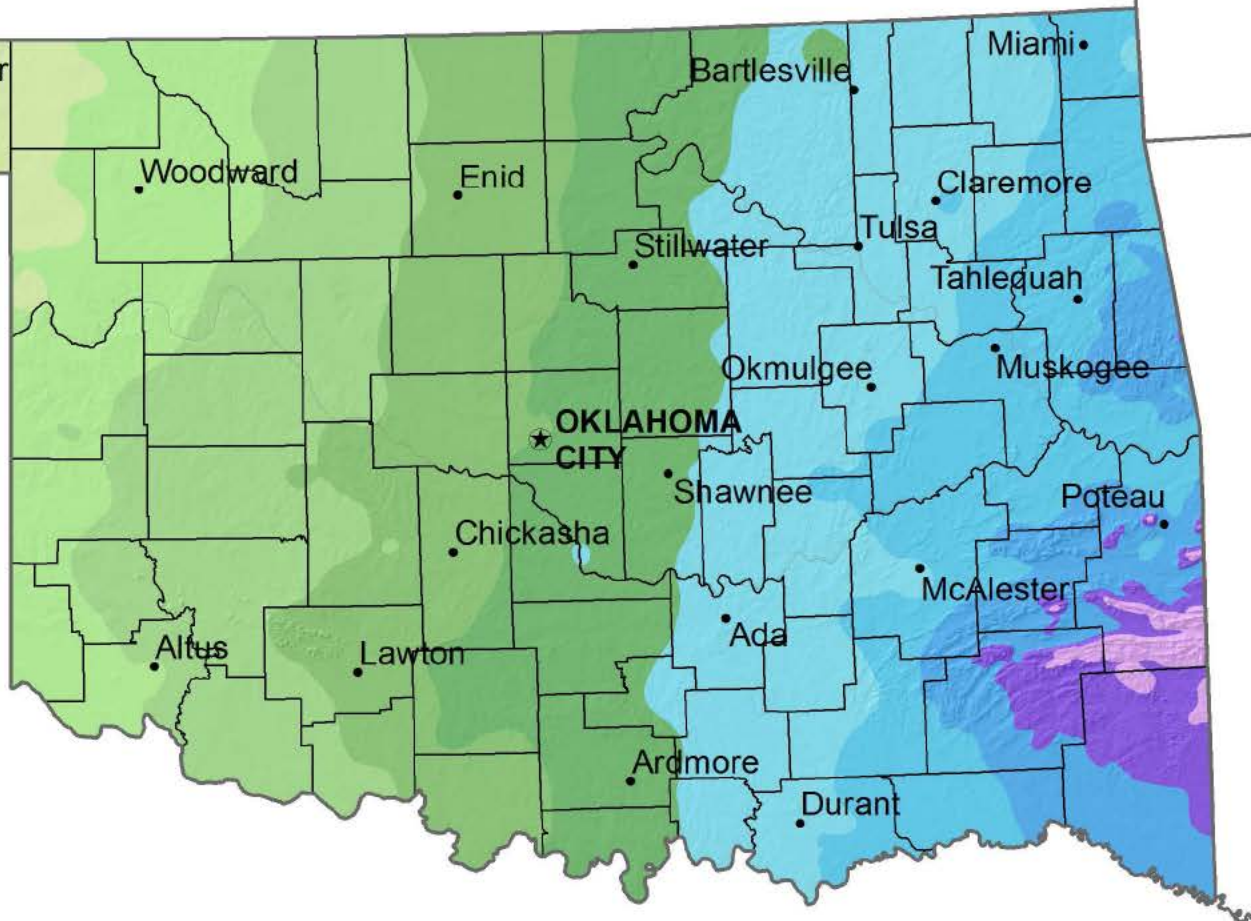
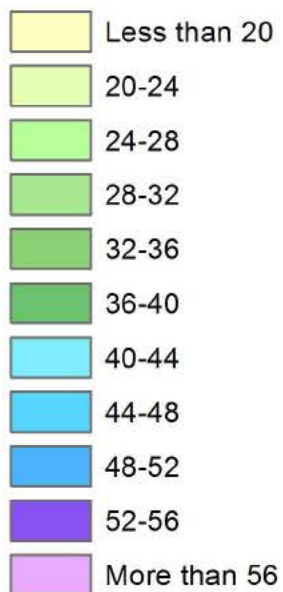


Oklahoma County Climate Summary

Average Annual Precipitation (1981-2010)

Oklahoma

Precipitation (in.)



0 15 30 60 Miles

Oklahoma Climate >

Local Data >

Tornadoes & Severe Storms >

Drought & Wildfire >

Extreme Heat & Cold >

Outlooks >

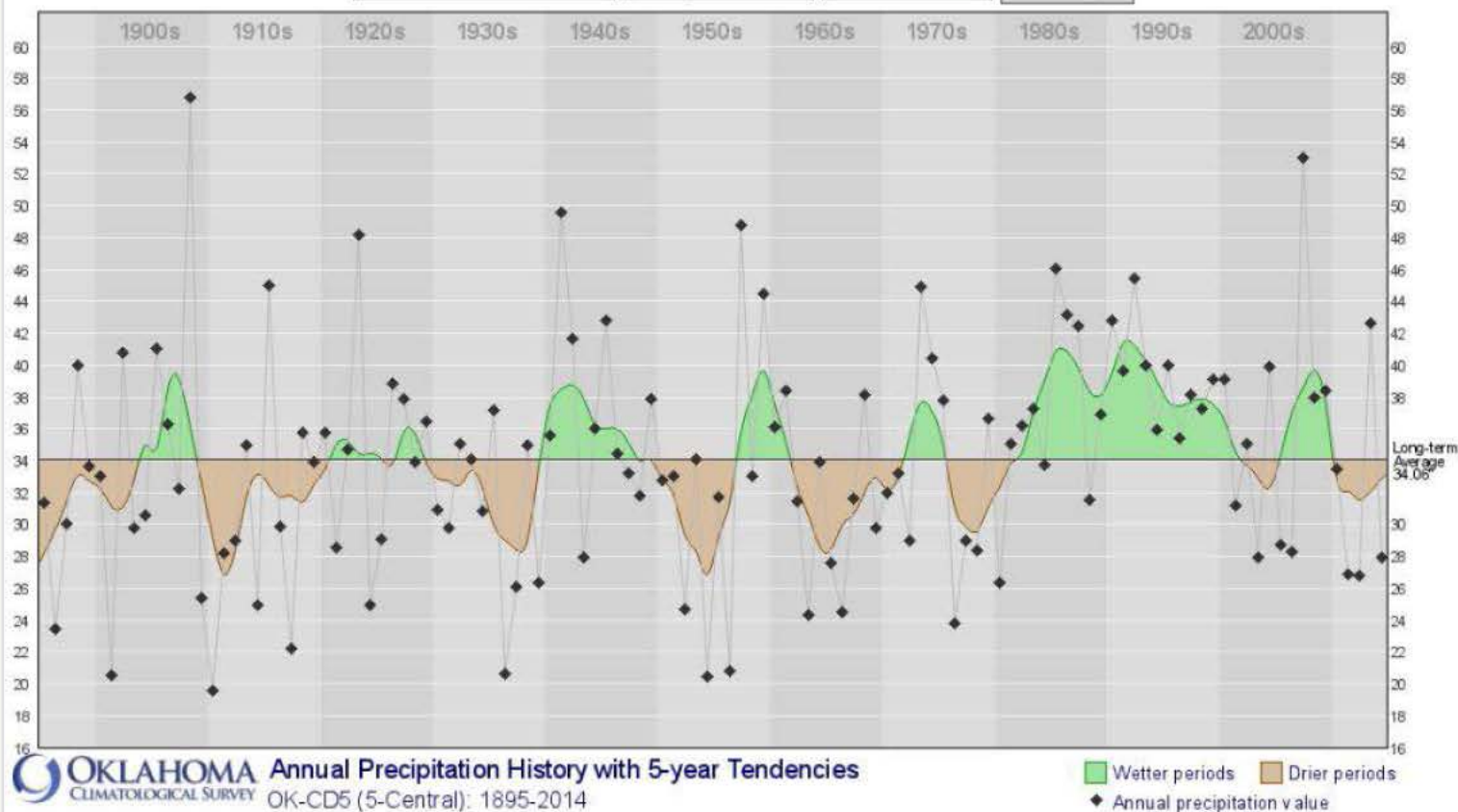
Reports & Summaries >

Links & Resources >

Precipitation history - Annual, Central

[Share](#) [Tweet](#)

CD5 Central ▼ Precipitation ▼ Annual ▼ Get Graph



The graph shows the evolution of Oklahoma's precipitation history since the modern record began in 1895. The diamonds represent the average of the measured precipitation in the region for each year. The green-brown trace represents the five-year weighted average of these precipitation values over time.

Reference 6, Oklahoman Newspaper Advertisements

HERE WE ARE!

Corner of N. W. 1st
& The New & Modern
Classen Boulevard



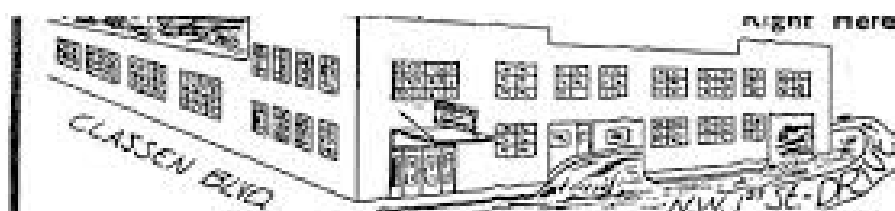
THE SUNSHINE LAUNDRY & DRY CLEANERS

with
Oklahoma City's most convenient Laundry & Dry Cleaning
DRIVE THRU SERVICE

~~~~~ FREE ~~~~~ A SPECIAL ~~~~~ FREE ~~~~~  
A pair of men's shoes will be polished "Sunshine" bright free and returned with your laundry when left with your bundle of wash in our convenient "Lady Man's" drive thru department.

This is only one of many advantages which can be yours when you deposit your laundry worries with our "Leave Your Laundry—Never Leave Your Car" service.

**FOR FREE PICK-UP AND DELIVERY SUPER SERVICE—PHONE FO 5-7494**



### DON'T MISS IT!

## THE SUNSHINE SHOESHINE SPECIAL

Leave a pair of shoes and your bundle of washday worries with Nora Let-us Drive-Thru Department debutante—both laundry and shoes will be returned to you sparkling! The loan-day of economical cash and carry rates, and the shoes? Why FREE, of course!!

One day bachelor bundle shirt service—6 shirts **ONLY \$1.00**  
Cleaning fresh as new—laundry sparkling, too  
Free pick up and Delivery speedy service—Phone FO 5-7494

**LET THE SUNSHINE LAUNDRY CHEER YOUR WASHDAY BLUES  
AT NO EXTRA COST PUT A SHINE ON YOUR SHOES!**

Corner First & Classen

Telephone FO 5-7494



## Reference 7: Environmental Complaints

**From:** [Akin, Ellen](#)  
**To:** [Cantwell, Hal](#)  
**Subject:** RE: environmental complaints  
**Date:** Monday, March 23, 2015 2:23:41 PM

---

I didn't find any citizen complaints/spill reports for this company name or the address.

Ellen

---

**From:** Cantwell, Hal  
**Sent:** Monday, March 23, 2015 2:21 PM  
**To:** Akin, Ellen  
**Subject:** environmental complaints

For a report I am preparing I need to know if we have any records of complaints for Sunshine Cleaners

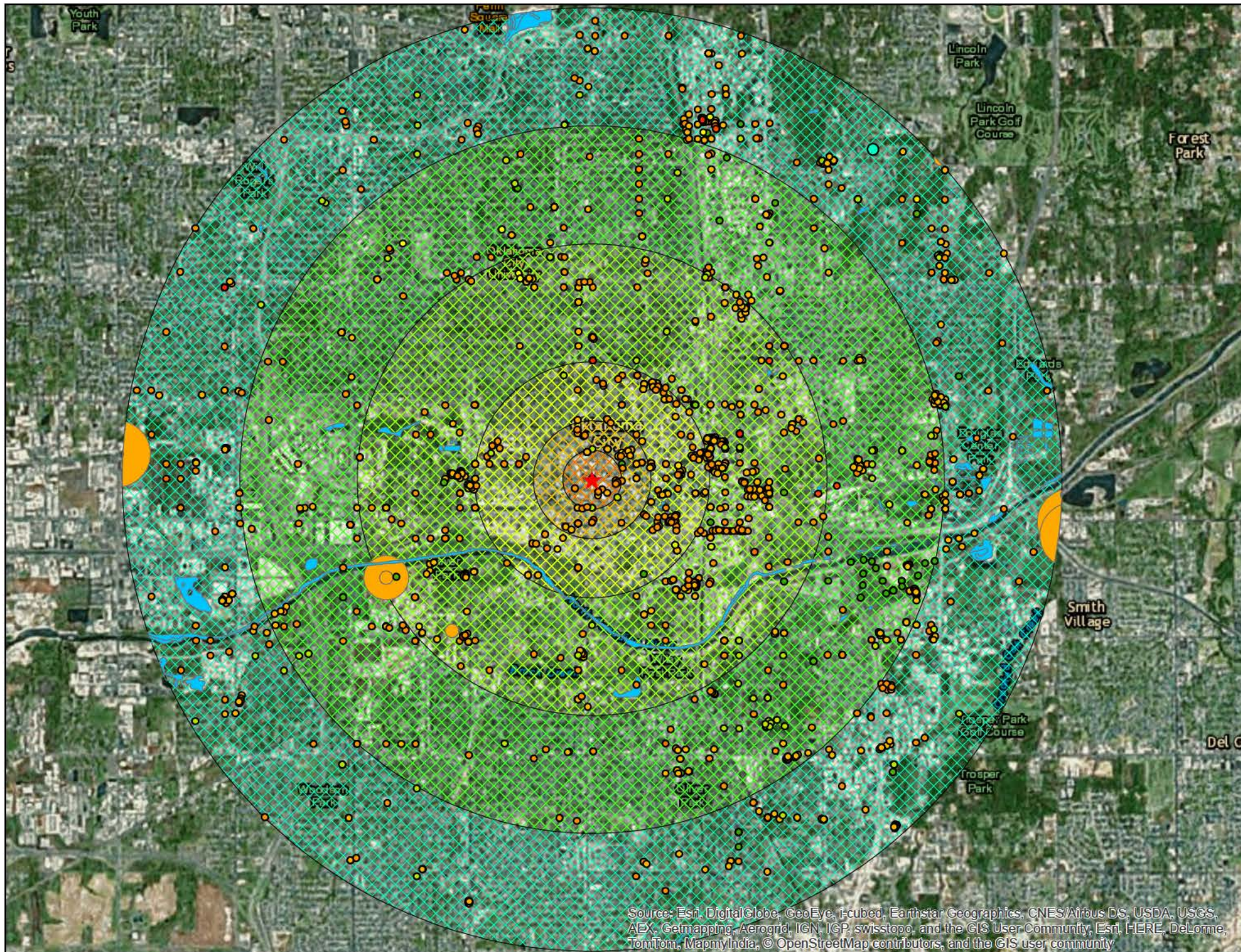
Sw $\frac{1}{4}$  Sec33 T12N R3W  
I0I2 NW 1st ST, Oklahoma City  
Oklahoma County, Oklahoma

Thanks

Hal

**Refence 8, Sunshine Cleaners Population, Public Water Wells, Surface Water Intakes,  
Wellhead Protection Areas, and Wetlands Areas**





# Sunshine Cleaner PA/SI

**Legend**

★ Site Location

**Well Use Category**

- Air Sparging
- Commercial
- Domestic
- Heat Exchange
- Industrial
- Irrigation
- Observation Well
- Public Water Supply
- Pump and Treat
- Site Assessment
- Soil Evaluation
- Vapor Extraction
- Water Location
- Water Quality
- Wetlands
- Wellhead Protection Area
- 0-0.25 Mile Buffer
- 0.25-0.5 Mile Buffer
- 0.5-1.0 Mile Buffer
- 1.0-2.0 Mile Buffer
- 2.0-3.0 Mile Buffer
- 3.0-4.0 Mile Buffer

We make every effort to provide and maintain accurate, complete, usable, and timely information. However, some data and information on this map may be preliminary or out of date and is provided with the understanding that it is not guaranteed to be correct or complete. Conclusions drawn from, or actions undertaken on the basis of, such data and information are the sole responsibility of the user.



Map Created by Brent Stone  
on 3/12/2015



Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community, Esri, HERE, DeLorme, TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS user community



# MEMORANDUM

Date: March 10, 2015

To: Hal Cantwell, Environmental Programs Specialist

From: Brent Stone, Technical Intern

Re: Population, Public Water Wells, Surface Water Intakes, Wellhead Protection Areas, and Wetlands Areas  
Sunshine Cleaners Site  
Oklahoma County, Oklahoma

The population information for the Sunshine Cleaners Site located at SW ¼ Section 33 of T12N R3W is as follows:

1. Within ¼ mile of the site: 2173
2. Between ¼ and ½ miles of the site: 1800
3. Between ½ and 1 miles of the site: 4544
4. Between 1 and 2 miles of the site: 23590
5. Between 2 and 3 miles of the site: 51563
6. Between 3 and 4 miles of the site: 64704

The Wetlands information for the Tidewater Site located at Sunshine Cleaners Site located at SW ¼ Section 33 of T12N R3W is as follows:

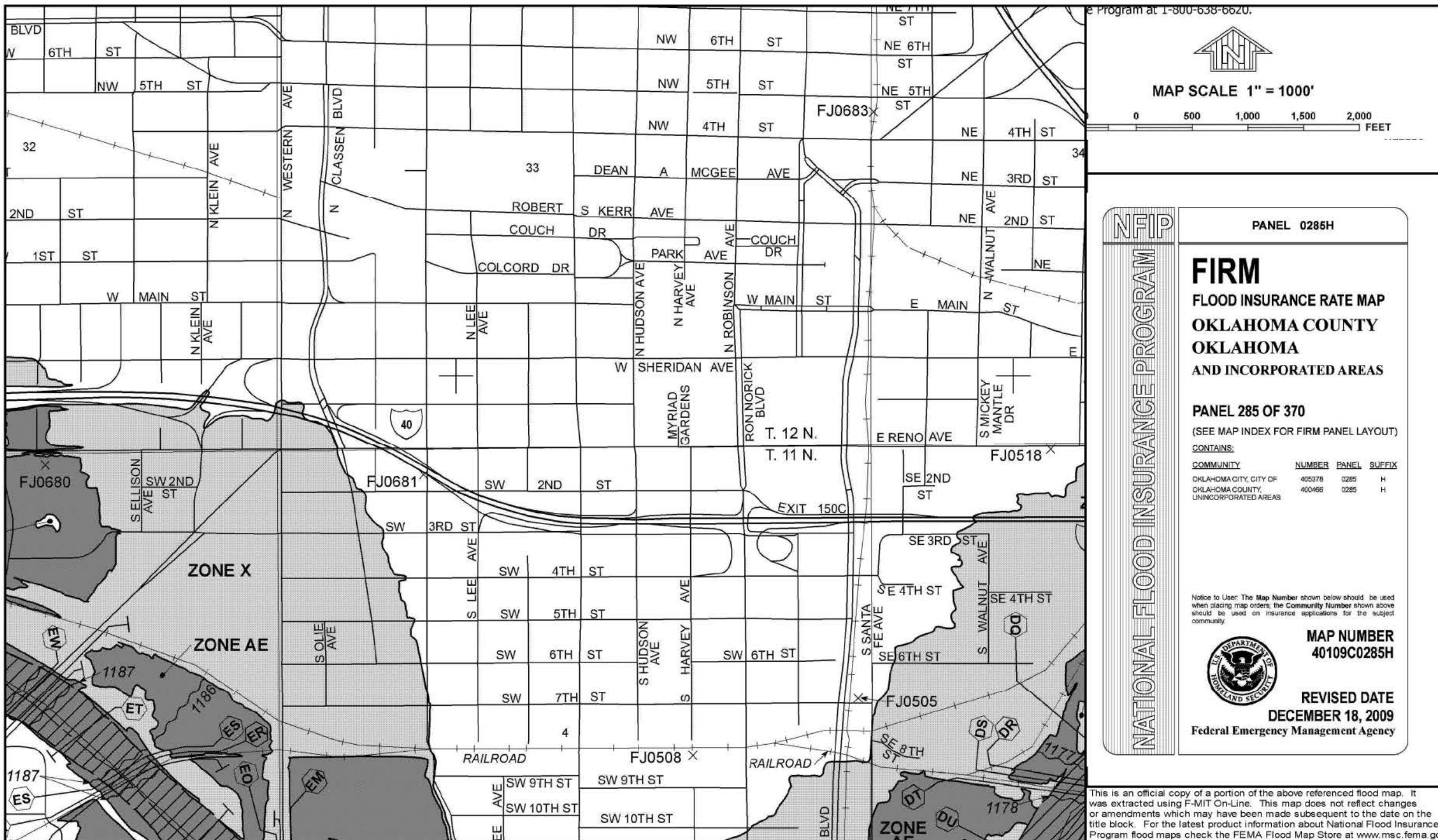
1. Within ¼ mile of the site: 0 acres
2. Between ¼ and ½ miles of the site: 0 acres
3. Between ½ and 1 miles of the site: 86.004 acres
4. Between 1 and 2 miles of the site: 113.99 acres
5. Between 2 and 3 miles of the site: 105.67 acres
6. Between 3 and 4 miles of the site: 319.96 acres

There is one (1) public water supply well, there are 13 wellhead protection areas, and no public surface water supply intakes within a 4-mile radius of the site. See attached map and table.

All data was collected using the DEQ ArcView databases. All data contained in K:\LPD GIS Data\B\_Stone\Sunshine Cleaner PA2015.

Attachment

**Reference 9, Sunshine Cleaners Floodplain Map**



the Program at 1-800-638-6620.



MAP SCALE 1" = 1000'

0      500      1,000      1,500      2,000

PANEL 0285H

**FIRM**

**FLOOD INSURANCE RATE MAP  
OKLAHOMA COUNTY  
OKLAHOMA  
AND INCORPORATED AREAS**

PANEL 285 OF 370

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

| <u>COMMUNITY</u>                         | <u>NUMBER</u> | <u>PANEL</u> | <u>SUFFIX</u> |
|------------------------------------------|---------------|--------------|---------------|
| OKLAHOMA CITY, CITY OF                   | 405378        | 0285         | H             |
| OKLAHOMA COUNTY,<br>UNINCORPORATED AREAS | 400466        | 0285         | H             |

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER  
40109C0285H



 **REVISED DATE**  
**DECEMBER 18, 2009**  
**Federal Emergency Management Agency**

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at [www.msc.fema.gov](http://www.msc.fema.gov)

**Reference 10 - Phase II Environmental Site Assessment -- Fred Jones Building Complex**



**Phase II Step II Environmental Site Assessment  
Fred Jones Building Complex  
900 West Main Street  
Oklahoma City, Oklahoma**

Submitted to:

**Urban Redevelopment Division  
Oklahoma City Planning Department  
420 W. Main, Suite 900  
Oklahoma City, OK 73102**

By

**Cardinal Engineering  
CEI  
1015 N Broadway Ave, Ste. 300  
Oklahoma City, OK 73102  
405-842-1066**

**December 17, 2013**

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## Figures

Figure 1 – Site Vicinity Map

Figure 2 – Identified RECs

Figure 3 – Estimated Areas of Impact from Initial Phase II ESA

Figure 4 – Sample Locations, Initial and Subsequent Phase II

Figure 5 – Estimated Extent of Chlorinated Solvent Plume

Figure 6 – Estimated Extent of Petroleum Impact

## Tables

Table 1 – Results of Soil Testing for Chlorinated Solvent Impacts

Table 2 – Results of Groundwater Testing for Chlorinated Solvent Impacts

Table 3 – Results of Soil Testing for Petroleum Impacts (VOCs and TPH)

Table 4 – Results of Groundwater Testing for Petroleum Impacts (VOCs and TPH)

## Appendices

Appendix A – Boring Logs

Appendix B – Laboratory Reports for Soil Testing

Appendix C – Laboratory Reports for Groundwater Testing

## EXECUTIVE SUMMARY

### Subject Property

Fred Jones Complex (900 W. Main Street) - The property is located on all four corners at the intersection of W. Main Street and Fred Jones Road, Oklahoma City, Oklahoma. The address of the primary building is 900 W. Main Street. The Subject Property covers an area of approximately seven acres of urban land. Due to the size, the Subject Property is broken up into four sections in respect to the location relative to the intersection of W. Main Street and Fred Jones Road.

Section 1 represents the vacant urban land area located adjacent to the northwest corner of W. Main Street and Fred Jones Road. The legal description of Section 1 is as follows: Lots 1 thru 4 BEG NE/C LT 1 BLK 20 Main Street Addition TH N14.6FT SWLY along a curve to the left 110.26 FT S14.6FT TO NW/C LT 4 BLK 20 Main Street Addition TH NELY along a curve to the right 110.27 FT to BEG. Lots 5 thru 10 on Block 20 of the Main Street Addition, located in the southwest quarter of Section 33, Township 12 North, Range 3 West, Oklahoma City, Oklahoma.

Section 2 represents the developed parking area located on the northeast corner of N. Main Street and Fred Jones Road. The legal description of Section 2 is as follows: Lots 12 and 13 of Block 13, Main Street Addition and Lots 14, 15 and 16 of Block 13, Main Street Addition, located in the southwest quarter of Section 33, Township 12 North, Range 3 West, Oklahoma City, Oklahoma.

Section 3 represents an entire city block and is located on the southwest corner of the W. Main Street and Fred Jones Road intersection. The legal description of Section 3 is as follows: Lots 1 thru 17 of Block 19 and part of Section 33, Township 12N, Range 3W being 19 feet adjoining to Lot 17 Block 19 on the west. On Block 19, Lot 18 EX Beginning at SW/C of Lot 18 TH E4.44FT NWLY 76.7FT SLY76.64FT to beginning continue 0.004 acres more or less and Lots 19 thru 21. All Lots 19 thru 36 plus a part of the vacant alley beginning with NW/C Lot 29 Block 19 TH E200FT to NE/C Lot 36 Block 19 TH N9.35FT W200FT S9.35FT to beginning, located in the southwest quarter of Section 33, Township 12 North, Range 3 West, Oklahoma City, Oklahoma.

Section 4 represents the parking lot located on the southeast corner of W. Main Street and Fred Jones Road. The legal description for Section 4 is as follows: Lots 13 thru 24 of Block 14 of the Main Street Addition, located in the southwest quarter of Section 33, Township 12 North, Range 3 West, Oklahoma City, Oklahoma.

Current Owner: Hall Capital, LLC and Downtown Redevelopment, LLC

Current Use: Section 1 – Vacant urban land; Section 2 – gravel parking; Section 3 – warehouse, office space, light industrial use; and Section 4 – paved parking.

## **Phase II Step II Environmental Site Assessment**

Phase II Step II Environmental Site Assessment (ESA) activities were conducted in general accordance with the approved Field Sampling Plan for Phase II Step II ESA, dated October 23, 2013. Field activities associated with the investigation were conducted between November 18 and December 2, 2013. The investigation consisted of advancing eleven direct push boreholes (DB-A to DP-K), conducting field screening of soils, installing temporary groundwater monitoring wells at each borehole location and collecting and performing laboratory analysis of soil and groundwater samples.

- 1) Date of direct push boreholes and installation ..... November 19-20, 2013  
of temporary monitoring wells and soil sampling
- 2) Date of well development ..... November 22-25, 2013
- 3) Date of groundwater sampling ..... November 27, 2013
- 4) Date of sump sampling ..... December 2, 2013
- 5) Date of Report ..... December 17, 2013
- 6) Type of report: Phase II Step II Environmental Site Assessment
- 7) Report is for: City of Oklahoma City Planning Department
- 8) Report by: Cardinal Engineering, Inc.

## **Phase II Environmental Site Assessment**

- 1) Date of direct push boreholes, installation ..... April 24, 2013  
of temporary monitoring wells and soil sampling  
inside of structures in Section 3
- 2) Date of groundwater sampling of temporary ..... April 25, 2013  
monitoring wells inside of structures in Section 3
- 3) Date of drilling, temporary well installation ..... May 6-8, 2013  
and soil sampling.
- 4) Date of Well Development ..... May 7-8, 2013
- 5) Date of groundwater sampling ..... May 10, 2013
- 6) Date of Report ..... May 30, 2013
- 7) Type of report: Phase II Environmental Site Assessment Conducted in General  
Accordance with Field Sampling Plan



8) Report is for: City of Oklahoma City Planning Department

9) Report by: Cardinal Engineering, Inc.

The initial Phase II ESA of the Property consisted of advancing direct push boreholes (DP-1 through DP-10/10A), drilling soil boreholes and converting them into temporary groundwater monitoring wells (B-1/TMW-1 through B-8/TMW-8), conducting field screening of soils and collecting and performing laboratory analysis of soil and groundwater samples. Six general areas of apparent subsurface impact were identified at the Subject Property as a result of the initial Phase II ESA. Areas of apparent subsurface impacts are shown on Figure 3 and are as follows:

- 1) West of the conjoined structures in Section 3 of the Subject Property: This is an area where historic use reportedly included solvent storage. One soil boring/temporary monitoring well was conducted in this area (B-1/TMW-1). Although soil and groundwater sampling did not confirm an impact, PID measurements at B-1/TMW-1 were as high as 60.5 units.
- 2) Beneath the western portion of the conjoined structures in Section 3 of the Subject Property: This is an area where historic use reportedly included sandblasting and washing. A direct push borehole (DP-5/5A) was conducted in this area and converted into a temporary groundwater monitoring well. Sampling indicated impact to near-surface soils by arsenic and lead. Arsenic was identified at a concentration of 26.1 mg/Kg. Lead was identified at a concentration of 1,330 mg/Kg. These concentrations exceed RSLs for residential land use. Additionally, field screening, visual observation and odor at this location indicated impact by VOCs extending from the surface to a depth of approximately ten feet. Soil sampling at DP-5/5A identified 1,2-Dichlorobenzene (0.352 mg/Kg) between 2 feet to 3 feet. This concentration is below the RSL for residential land use. Groundwater sampling at DP-5/5A identified 1,1-Dichloroethane (10.2 ug/L). No MCL has been published for this compound.
- 3) Beneath the south-west portion of the conjoined structures on Section 3 of the Subject Property: This is an area where historic use reportedly included parts washing. A direct push borehole (DP-7) was conducted in this area. Sampling at DP-7 indicated impact to near-surface soils by TPH. TPH-DRO was identified at a concentration of 1,140 mg/Kg. TPH-ORO was identified at a concentration of 447 mg/Kg. These reported concentrations exceed ODEQ Tier 1 Generic Cleanup Levels for residential land use (50 mg/Kg).
- 4) Beneath the south-central portion of the conjoined structures in Section 3 of the Subject Property: A chlorinated solvent plume was identified in groundwater in this area. Tetrachlorethylene (PCE) and/or its degradation products (Trichlorethylene (TCE) and cis 1,2-Dichloroethylene (cis 1,2-DCE)) were identified in groundwater samples collected from DP-9 (PCE-586 ug/L, TCE-6.72 ug/L, cis 1,2-DCE-7.89 ug/L), B3/TMW-3 (PCE-1,010 ug/L, TCE-6.26 ug/L) and B-2/TMW-2 (PCE-13.9 ug/L).

Reported concentrations for PCE and/or TCE at these locations exceed MCLs.

- 5) Beneath the eastern portion of the conjoined structures in Section 3 of the Subject Property: This area reportedly contains a petroleum tank located in a subsurface vault. At DP-10A, apparent soil staining was evident between 4.5 feet and 9 feet. Soil sampling identified TPH-DRO at a concentration of 80.9 mg/Kg and TPH-ORO at a concentration of 78 mg/Kg. These reported concentrations exceed ODEQ Tier 1 Generic Cleanup Levels for residential land use. Sampling did not indicate an impact to groundwater at this area.
- 6) Sections 1, 2 and 4 of the Subject Property: Soil borings/temporary monitoring wells B-8/TMW-8, B-7/TMW-7 and B-6/TMW-6 were conducted to assess the numerous RECs identified in these areas as part of the Phase I ESA. Sampling conducted under this assessment identified petroleum impacted soil and groundwater at each of these locations. Petroleum contaminants were identified in soil and groundwater at B-7/TMW-7 and B-8/TMW-8 at concentrations exceeding residential RSLs and MCLs, respectively.

#### **Phase I Environmental Site Assessment**

- 1) Date of Report ..... February 13, 2013
- 2) Type of report: Phase I Environmental Site Assessment
- 3) Report is for: City of Oklahoma City Planning Department
- 4) Report by: Cardinal Engineering

Previous industrial/commercial uses of the Property included a manufacturing and operations facility for Ford Motor Company (Section 3), filling stations (Sections 1, 2 and 4), auto repair shops (Section 2) and bulk oil storage in the form of above ground storage tanks and an oil house (Section 1). Leaking Underground Storage Tank (LUST) cases were identified at the Subject Property. Based on the ESA, historic dry cleaning and/or printing operations occurred on neighboring properties to the north, east and west. An auto body repair shop/lacquer facility historically operated on the neighboring property to the east. Also, a LUST case was identified on an adjacent property to the north.

#### **Phase II Step II Environmental Site Assessment Conclusions**

The Initial Phase II ESA indicated six general areas of apparent impact at the Subject Property. Phase II Step II ESA activities were conducted in November and December 2013 to further characterize two of the areas of apparent impact (the identified chlorinated solvent plume in Section 3 of the Subject Property and the identified petroleum plume in Sections 1, 2 and 4 of the Subject Property). Findings of the Phase II Step II ESA are as follows:

- 1) The estimated extent of chlorinated solvent plume in groundwater based on assessment data obtained as part of the initial Phase II ESA and as part of Phase II Step II ESA is shown on Figure 5. It is apparent that much of the central and western portions of the

southern building on Section 3 of the Subject Property overlies impacted groundwater. The southwest portion of the northern building on Section 3 of the Subject Property also overlies impacted groundwater. The plume appears to be delineated to the northwest, north, northeast and southeast. However, it is apparent that impacted groundwater has migrated off-site to the south. Potential for indoor vapor intrusion in buildings on Section 3 associated with the subsurface chlorinated solvent plume cannot be ruled out. Reported concentrations of PCE and TCE in some of the groundwater exceeds general risk based screening levels for vapor intrusion as obtained from the current EPA/OSWER Vapor Intrusion Screening Level (VISL) calculator using a commercial exposure scenario with a  $1 \times 10^{-5}$  target risk for carcinogens and a target hazard quotient of 1.

- 2) The estimated extent of petroleum impacts to groundwater based on data obtained as part of the initial Phase II ESA and as part of Phase II Step II ESA is shown on Figure 6. It does not appear that petroleum contaminants have migrated from areas of identified impact at Sections 1, 2 and 4 to beneath the northern portion of the conjoined structures located on Section 3 of the Subject Property. Based on distance to known impacts, based on no indication of petroleum contaminants in groundwater along the northern perimeter of the conjoined structures and based on depth to groundwater in this area (greater than ten feet), it appears that vapor intrusion in the conjoined structures on Section 3 from these identified off-site areas of petroleum impact can be ruled out.

The other four areas of impact identified during the initial Phase II ESA were not further evaluated as part of the November and December 2013 assessment. Conclusions and recommendations regarding these areas of impact area as presented in the initial Phase II ESA report (May 2013).

### **Recommendations**

The following recommendations are made based on the initial Phase II ESA and on the Phase II Step II ESA.

- 1) Impacts to subsurface soils and/or groundwater by VOCs, TPH, lead and/or arsenic were identified at multiple locations beneath the conjoined structures in Section 3 of the Subject Property. It is possible that contaminants and/or buried equipment (such as tanks) may be present in areas not investigated and/or that were not identified. Also, reported concentrations for VOCs suggest the potential for an on-going continual source (e.g. highly impacted soils, free phase product). Appropriate measures should be taken if unidentified areas of impacted soils, groundwater or underground storage tanks are encountered during future development of the property. Any contaminated materials excavated or removed during site development, construction or drilling of piers will require appropriate management (which may require treatment and/or disposal). Appropriate health and safety measures should be taken to limit exposure to workers and/or public to impacted media.

- 2) A chlorinated solvent plume has been identified beneath approximately the southeast quarter of the conjoined structures located on Section 3 of the Subject Property. The need for vapor intrusion mitigation measures should be addressed prior to constructing or inhabiting any structures at this location.
- 3) Petroleum impacted soils and/or groundwater are evident in Sections 1, 2 and 4 of the Subject Property. Leaking Underground Storage Tank (LUST) cases have been closed at these areas by the Oklahoma Corporation Commission (OCC) with contaminants remaining in place. If these Sections are to be developed, it is recommended that the OCC be notified to determine if additional measures are warranted to address petroleum impacted soils and/or groundwater based on updated information and/or changes in property use. Any contaminated materials excavated or removed during site development, construction or drilling of piers in these areas will require appropriate management (which may require treatment and/or disposal). Appropriate health and safety measures should be taken to limit exposure to workers and/or public to impacted media. It does not appear that impacts from Sections 1, 2 and 4 of the Subject Property affect Section 3 of the Subject Property.
- 4) It is recommended that controls be put into place on the Subject Property to prevent access or exposure to subsurface soils and/or groundwater. Any potentially impacted soil or groundwater generated at the site should be analyzed to ensure proper management/disposal.
- 5) It appears that chlorinated solvents have migrated through groundwater off-site to the south of the Subject Property, which could impact neighboring properties. Additional investigation would be needed to determine the extent of migration.



## 1.0 OBJECTIVE

Six general areas of apparent subsurface impacts were identified at the Fred Jones Building Complex (900 West Main Street, Oklahoma City, OK) as a result of an initial Phase II Environmental Site Assessment (ESA) conducted in April and May 2013. A report was issued on May 31, 2013. In November and December 2013, additional site assessment work (Phase II Step II) consisting of advancing direct push boreholes, conducting field screening of soils, installing temporary groundwater monitoring wells and collecting and performing laboratory analysis of soil and groundwater samples was conducted to further characterize some of the previously identified impacts. This report presents findings of the additional site assessment work conducted subsequent to the initial Phase II ESA.

## 2.0 PHYSICAL SETTINGS

A satellite image of the Subject Property is included in Figure 1. The property is located on all four corners at the intersection of W. Main Street and Fred Jones Road, Oklahoma City, Oklahoma. The Subject Property covers an area of approximately seven acres of urban land. Surface topography around the Subject Property is generally flat with a slight slope to the southwest. Based on surface topography and proximity to the Oklahoma River, groundwater flow is assumed to be to the south or southwest. Due to the size, the Subject Property is broken up into four sections in respect to location relative to the intersection of W. Main Street and Fred Jones Road.

Section 1 represents the vacant urban land area located adjacent to the northwest corner of W. Main Street and Fred Jones Road. The legal description of Section 1 is as follows: Lots 1 thru 4 BEG NE/C LT 1 BLK 20 Main Street Addition TH N14.6FT SWLY along a curve to the left 110.26 FT S14.6FT TO NW/C LT 4 BLK 20 Main Street Addition TH NELY along a curve to the right 110.27 FT to BEG. Lots 5 thru 10 on Block 20 of the Main Street Addition, located in the southwest quarter of Section 33, Township 12 North, Range 3 West, Oklahoma City, Oklahoma. Section 1 of the Subject Property is approximately 0.8 acres and almost triangular in shape with the southern edge running adjacent to W. Main Street, but not including the property adjacent to the N. Classen Blvd; and the eastern edge running adjacent to Fred Jones Road. It is comprised mostly of vacant urban land covered in grass and gravel with one vacant building.

Section 2 represents the developed parking area located on the northeast corner of N. Main Street and Fred Jones Road. The legal description of Section 2 is as follows: Lots 12 and 13 of Block 13, Main Street Addition and Lots 14, 15 and 16 of Block 13, Main Street Addition, located in the southwest quarter of Section 33, Township 12 North, Range 3 West, Oklahoma City, Oklahoma. Section 2 of the Subject Property is approximately 0.5 acres and rectangular in shape.

Section 3 represents an entire city block and is located on the southwest corner of the W. Main Street and Fred Jones Road intersection. The legal description of Section 3 is as follows: Lots 1 thru 17 of Block 19 and part of Section 33 Township 12N Range 3W being 19 feet adjoining to Lot 17 Block 19 on the west. On Block 19, Lot 18 EX Beginning at

SW/C of Lot 18 TH E4.44FT NWLY 76.7FT SLY76.64FT to beginning continue 0.004 acres more or less and Lots 19 thru 21. All Lots 19 thru 36 plus a part of the vacant alley beginning with NW/C Lot 29 Block 19 TH E200FT to NE/C Lot 36 Block 19 TH N9.35FT W200FT S9.35FT to beginning, located in the southwest quarter of Section 33, Township 12 North, Range 3 West, Oklahoma City, Oklahoma. Section 3 of the Subject Property is approximately 4.5 acres and is fully developed with six adjoining structures, loading docks and drive up ramps. The space is utilized as a warehouse, office space, and for light industrial use.

Section 4 represents the parking lot located on the southeast corner of W. Main Street and Fred Jones Road. The legal description for Section 4 is as follows: Lots 13 thru 24 of Block 14 of the Main Street Addition, located in the southwest quarter of Section 33, Township 12 North, Range 3 West, Oklahoma City, Oklahoma. Section 4 of the Subject Property is approximately 1.5 acres and "L" shaped. This area of the Subject Property is comprised of a paved parking area.

Current Owner: Hall Capital, LLC and Downtown Redevelopment, LLC

Current Use: Section 1 of the property contains gravel parking and a small vacant building. Section 2 is developed as a parking lot. The former Fred Jones Complex covers Section 3 of the Property almost in its entirety. Section 4 is developed as a parking lot. North of the Property are Southwest Tire and Marble and Oklahoma City Fleet Services Parking. East of the Property is SMC Consulting Engineers, Dagwell Dixie Company Building and IRWIN Business Machines (a computer and office repair company). South of the Property is a Sonic Restaurant, a Taco Bell restaurant, Tietz Designs (a glass and furniture design and manufacturing company) and Oklahoma Clutch Repair Center. West of the Property is a Valero gas station, a Subway restaurant and Downtown Glass. Site topography is relatively flat.

### **3.0 FINDINGS OF THE PHASE I ENVIRONMENTAL SITE ASSESSMENT**

Cardinal completed a Phase I Environmental Assessment (ESA) for the Property dated February 13, 2013. The ESA described current and past uses of the Property and adjoining properties. Previous industrial/commercial uses of the Property included a manufacturing and operations facility for Ford Motor Company (Section 3), filling stations (Sections 1, 2 and 4), auto repair shops (Section 2) and bulk oil storage in the form of above ground storage tanks and an oil house (Section 1). Leaking Underground Storage Tank (LUST) cases were identified at the Subject Property. Based on the ESA, historic dry cleaning and/or printing operations occurred on neighboring properties to the north, east and west. An auto body repair shop/lacquer facility historically operated on the neighboring property to the east. Also, a LUST case was identified on an adjacent property to the north. The approximate location of recognized environmental conditions (RECs) identified in the ESA are shown on Figure 2.

#### 4.0 FINDINGS OF THE INITIAL PHASE II ENVIRONMENTAL SITE ASSESSMENT

The initial Phase II ESA of the Property consisted of advancing direct push boreholes (DP-1 through DP-10/10A), drilling soil boreholes and converting them into temporary groundwater monitoring wells (B-1/TMW-1 through B-8/TMW-8), conducting field screening of soils and collecting and performing laboratory analysis of soil and groundwater samples. Six general areas of apparent subsurface impact were identified at the Subject Property as a result of the initial Phase II ESA. Areas of apparent subsurface impacts are shown on Figure 3 and are as follows:

- 1) West of the conjoined structures in Section 3 of the Subject Property: This is an area where historic use reportedly included solvent storage. One soil boring/temporary monitoring well was conducted in this area (B-1/TMW-1). Although soil and groundwater sampling did not confirm an impact, PID measurements at B-1/TMW-1 were as high as 60.5 units.
- 2) Beneath the western portion of the conjoined structures in Section 3 of the Subject Property: This is an area where historic use reportedly included sandblasting and washing. A direct push borehole (DP-5/5A) was conducted in this area and converted into a temporary groundwater monitoring well. Sampling indicated impact to near-surface soils by arsenic and lead. Arsenic was identified at a concentration of 26.1 mg/Kg. Lead was identified at a concentration of 1,330 mg/Kg. These concentrations exceed RSLs for residential land use. Additionally, field screening, visual observation and odor at this location indicated impact by VOCs extending from the surface to a depth of approximately ten feet. Soil sampling at DP-5/5A identified 1,2-Dichlorobenzene (0.352 mg/Kg) between 2 feet to 3 feet. This concentration is below the RSL for residential land use. Groundwater sampling at DP-5/5A identified 1,1-Dichloroethane (10.2 ug/L). No MCL has been published for this compound.
- 3) Beneath the south-west portion of the conjoined structures on Section 3 of the Subject Property: This is an area where historic use reportedly included parts washing. A direct push borehole (DP-7) was conducted in this area. Sampling at DP-7 indicated impact to near-surface soils by TPH. TPH-DRO was identified at a concentration of 1,140 mg/Kg. TPH-ORO was identified at a concentration of 447 mg/Kg. These reported concentrations exceed ODEQ Tier 1 Generic Cleanup Levels for residential land use (50 mg/Kg).
- 4) Beneath the south-central portion of the conjoined structures in Section 3 of the Subject Property: A chlorinated solvent plume was identified in groundwater in this area. Tetrachlorethylene (PCE) and/or its degradation products (Trichlorethylene (TCE) and cis 1,2-Dichloroethylene (cis 1,2-DCE)) were identified in groundwater samples collected from DP-9 (PCE-586 ug/L, TCE-6.72 ug/L, cis 1,2-DCE-7.89 ug/L), B3/TMW-3 (PCE-1,010 ug/L, TCE-6.26 ug/L) and B-2/TMW-2 (PCE-13.9 ug/L). Reported concentrations for PCE and/or TCE at these locations exceed MCLs.

- 5) Beneath the eastern portion of the conjoined structures in Section 3 of the Subject Property: This area reportedly contains a petroleum tank located in a subsurface vault. At DP-10A, apparent soil staining was evident between 4.5 feet and 9 feet. Soil sampling identified TPH-DRO at a concentration of 80.9 mg/Kg and TPH-ORO at a concentration of 78 mg/Kg. These reported concentrations exceed ODEQ Tier 1 Generic Cleanup Levels for residential land use. Sampling did not indicate an impact to groundwater at this area.
- 6) Sections 1, 2 and 4 of the Subject Property: Soil borings/temporary monitoring wells B-8/TMW-8, B-7/TMW-7 and B-6/TMW-6 were conducted to assess the numerous RECs identified in these areas as part of the Phase I ESA. Sampling conducted under this assessment identified petroleum impacted soil and groundwater at each of these locations. Petroleum contaminants were identified in soil at B-8/TMW-8 at concentrations exceeding residential RSLs, ODEQ Tier 1 Generic Cleanup Levels for TPH and Oklahoma Corporation Commission (OCC) screening levels. Petroleum contaminants were identified in groundwater at B-7/TMW-7 and B-8/TMW-8 at concentrations exceeding MCLs and OCC screening levels. Petroleum constituents were identified in groundwater at B-6/MW-6 at concentrations below applicable screening levels.

## **5.0 PHASE II STEP II ENVIRONMENTAL SITE ASSESSMENT**

Phase II Step II ESA was conducted subsequent to the initial Phase II ESA previously discussed. The objective of the additional site assessment was to obtain information to:

- 1) Further characterize the extent of the identified chlorinated solvent plume in Section 3 of the Subject Property and to determine if off-site migration is likely.
- 2) Evaluate potential for petroleum impacts to groundwater beneath the northeastern part of the structures in Section 3 of the Subject Property and to evaluate potential for vapor intrusion from previously identified petroleum impacts at Sections 1, 2 and 4 of the Subject Property.

Additional Site Assessment activities were conducted in general accordance with the approved Field Sampling Plan for Phase II Step II ESA, dated October 23, 2013. Field activities associated with the investigation were conducted between November 18 and December 2, 2013. The investigation consisted of advancing direct push boreholes, conducting field screening of soils, installing temporary groundwater monitoring wells and collecting and performing laboratory analysis of soil and groundwater samples.

### **5.1 DIRECT PUSH BOREHOLES**

Direct push boreholes were advanced at eleven locations (DP-A through DP-K) in Section 3 of the Subject Property. Direct push boreholes were advanced by Great Plains Probing Services, LLC. Temporary groundwater monitoring wells were installed at each direct push borehole

location. Approximate borehole/temporary monitoring well locations are shown on Figure 4 and are discussed below:

- DP-A was conducted in the western portion of the conjoined structures on Section 3 of the Subject Property, and northwest of identified chlorinated solvent impact at DP-9. The boring location was selected to determine the north and northwest extent of chlorinated solvent impact. This boring extended to a depth of twenty feet and was converted into a temporary groundwater monitoring well.
- DP-B was conducted in the central portion of the conjoined structures on Section 3 of the Subject Property, and northeast of identified chlorinated solvent impact at DP-9. The boring location was selected to determine the north and northeast extent of chlorinated solvent impact. This boring extended to a depth of twenty feet and was converted into a temporary groundwater monitoring well.
- DP-C was conducted in the western portion of the conjoined structures on Section 3 of the Subject Property, and southwest of identified chlorinated solvent impact at DP-9. The boring location was selected to determine the west and southwestern extent of chlorinated solvent impact. This boring extended to a depth of twenty feet and was converted into a temporary groundwater monitoring well.
- DP-D was conducted in the central portion of the conjoined structures on Section 3 of the Subject Property, and southeast of identified chlorinated solvent impact at DP-9. The boring location was selected to determine the eastern extent of chlorinated solvent impact. This boring extended to a depth of twenty feet and was converted into a temporary groundwater monitoring well.
- DP-E was conducted near the southern property boundary in Section 3 and south of identified chlorinated solvent impact at DP-9. The boring location was selected to evaluate potential for off-site migration of the chlorinated solvent plume in groundwater. This boring extended to a depth of twenty feet and was converted into a temporary groundwater monitoring well.
- DP-F was conducted near the southern property boundary in Section 3 and south of identified chlorinated solvent impact at B-3/TMW-3. The boring location was selected to evaluate potential for off-site migration of the chlorinated solvent plume in groundwater. This boring extended to a depth of twenty feet and was converted into a temporary groundwater monitoring well.
- DP-G was conducted near the southern property boundary in Section 3 and southeast of identified chlorinated solvent impact at B-3/TMW-3. The boring location was selected to evaluate potential for off-site migration of the chlorinated solvent plume in groundwater. This boring extended to a depth of twenty eight feet and was converted into a temporary groundwater monitoring well.



- DP-H was conducted north of the conjoined structures on Section 3 of the Subject Property, and south of identified petroleum impacts at Section 1 of the property (north of Main Street). The boring location was selected to determine if identified petroleum impact north of Main Street has migrated beneath the conjoined structures. This boring extended to a depth of twenty feet and was converted into a temporary groundwater monitoring well.
- DP-I was conducted north of the conjoined structures on Section 3 of the property, and south of identified petroleum impacts at Section 1 of the Subject Property (north of Main Street). The boring location was selected to determine if identified petroleum impact north of Main Street has migrated beneath the conjoined structures. This boring extended to a depth of nineteen feet and was converted into a temporary groundwater monitoring well.
- DP-J was conducted north of the northeast corner of conjoined structures on Section 3 of the Subject Property, and south of identified petroleum impacts at Sections 1 and 2 of the property (north of Main Street). The boring location was selected to determine if identified petroleum impact north of Main Street has migrated beneath the conjoined structures. This boring extended to a depth of 19.5 feet and was converted into a temporary groundwater monitoring well.
- DP-K was conducted east of the northeast corner of conjoined structures on Section 3 of the Subject Property, and south of identified petroleum impacts at Sections 1, 2 and 4 of the property (north of Main Street). The boring location was selected to determine if identified petroleum impact north of Main Street has migrated beneath the conjoined structures. This boring extended to a depth of twenty feet and was converted into a temporary groundwater monitoring well.

## **5.2 SAMPLING AND ANALYSIS**

Continuous core samples were obtained during direct push borings to aid in soil classification, identification of depth to water and identification of potential impacts. For each direct push borehole (DP-A through DP-K), field screening was conducted at approximate one foot intervals. Field screening was accomplished using a photo ionization detector (PID) equipped with a 10.6 eV lamp. Field screening results are included on the boring logs in Appendix A.

Since soil borings were not conducted in known source areas, soil samples were not collected for analysis from these boreholes unless field screening and/or visual observation indicated an impact. Field screening did indicate an impact at DP-A, DP-B, DP-C and DP-D. At each of these locations, a soil sample was collected from the area exhibiting the highest field screening measurement.

Soil samples, were submitted to Environmental Testing Inc. (Laboratory Certificate # 7211). Samples were analyzed for volatile organic compounds (VOCs) using EPA Method 8260 and total petroleum hydrocarbons (TPH) using TX 1005. TPH was analyzed for approximate gasoline range organics (C6 to C12), approximate diesel range organics (>C12 to C28) and approximate oil range organics (>28 to C35). The laboratory reports for soil testing associated

with Phase II Step II ESA work conducted in November and December 2013 are included in Appendix B.

Direct push borings were converted into temporary groundwater monitoring wells. Temporary wells were developed on November 22 and November 25, 2013. These wells were developed by surging with the bailer and purging a minimum of five well volumes and/or purging the wells dry. Sampling was conducted after allowing time for the wells to adequately recharge. Temporary monitoring wells were sampled on November 27, 2013. Prior to sampling, each well was purged of a minimum of three well volumes. Development, purging and sampling activities were completed using dedicated bailers. A groundwater sample was collected from a sump located in the basement of the facility on December 2, 2013. This sample was collected using a dedicated bailer. As part of quality assurance/quality control, a duplicate groundwater sample was collected from DP-H. Also field blanks and a trip blanks were collected.

All groundwater samples, including quality assurance/quality control samples, were submitted to Environmental Testing, Inc. Samples from temporary wells used to characterize the chlorinated solvent plume (DP-A through DP-G) and from the basement sump were analyzed for VOCs (EPA Method 8260). Samples from temporary wells used to evaluate potential petroleum impacts north of the northeast building (DP-H through DP-K) were analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX (EPA Method 8021)) and TPH (TX 1005). The laboratory reports for groundwater testing associated with Phase II Step II ESA work conducted in November and December 2013 are included in Appendix C.

### **5.3 PLUGGING BOREHOLES AND MANAGEMENT OF SOIL CUTTINGS AND PURGE WATER**

Direct push boreholes / temporary monitoring wells are still maintained at the Subject Property. Cardinal is currently making arrangements to plug these wells. Under OWRB regulations, these wells are to be plugged by December 20, 2013. Wells will be plugged in accordance with Oklahoma Water Resources Board (OWRB) regulations. Soil cuttings generated as a result of activities described herein are currently stored on-site in 55 gallon steel drums. Purge water generated as a result of activities described herein are currently stored on-site in plastic containers. Cardinal is currently scheduling sampling to characterize this material for disposal.

## **6.0 RESULTS OF PHASE II STEP II ENVIRONMENTAL SITE ASSESSMENT - CHLORINATED SOLVENT PLUME**

From the initial Phase II ESA, Tetrachlorethylene (PCE) and/or its degradation products (Trichlorethylene (TCE) and cis 1,2-Dichloroethylene (cis 1,2-DCE)) were identified in groundwater samples collected from DP-9 (PCE-586 ug/L, TCE-6.72 ug/L, cis 1,2-DCE-7.89 ug/L), B3/TMW-3 (PCE-1,010 ug/L, TCE-6.26 ug/L) and B-2/TMW-2 (PCE-13.9 ug/L). Reported concentrations for PCE and/or TCE at these locations exceed MCLs (5 ug/L). As part of Phase II Step II ESA, DP-A through DP-G were conducted to further characterize the extent of the identified chlorinated solvent plume and to determine if off-site migration has occurred. Results of soil analysis used to assess chlorinated solvent impacts (including those from the initial Phase II site assessment) are shown on Table 1. To evaluate the soil data, reported

concentrations for VOCs are compared to Region 6 EPA Regional Screening Levels (RSLs) for residential soil (Regional Screening Level Table master November 2013). Results of groundwater analysis used to assess chlorinated solvent impact (including those from the initial assessment) are shown on Table 2. For groundwater, reported concentrations for VOCs are compared to Federal Drinking Water Standards (MCLs). Results of the Phase II Step II ESA for the chlorinated solvent plume are as follows:

- DP-A was conducted in the western portion of the conjoined structures on Section 3 of the Subject Property, and northwest of identified chlorinated solvent impact at DP-9. This boring extended to a depth of 20 feet and was converted into a temporary groundwater monitoring well. Subsurface soils at this location consist of silty sand extending to a depth of approximately 4.5 feet underlain by gravel to a depth of five feet and underlain by silty clay to a depth of nine feet. Silty sand extends from 9 feet below surface to depths of at least 20 feet. Groundwater was encountered at an approximate depth of 14 feet during drilling and 14.66 feet during groundwater sampling.

During borehole advancement, field screening indicated potential impacts (field screening measurements greater than 10 units) at depths between 9.5 feet and 11.5 feet. The highest field screening measurement (39.5 instrument units) was measured at a depth of 11.5 feet. Based on this, a soil sample from DP-A was collected from a depth between 11 and 11.5 feet and submitted for laboratory analysis of VOCs and TPH. Tetrachloroethene (PCE) was identified in the soil sample at a concentration of 0.0255 mg/Kg. This concentration is below the RSL for residential land use (22 mg/Kg). No other VOCs were identified in soil at this location.

A groundwater sample was collected and submitted for laboratory analysis of VOCs. PCE was identified in groundwater at a concentration of 16 ug/L. This concentration exceeds the MCL for PCE (5 ug/L). No other VOCs were identified in groundwater at this location.

Based on field screening and laboratory analysis, Groundwater at DP-A **DOES** appear to be impacted.

- DP-B was conducted in the central portion of the conjoined structures on Section 3 of the Subject Property, and northeast of identified chlorinated solvent impact at DP-9. This boring extended to a depth of twenty feet and was converted into a temporary groundwater monitoring well. Subsurface soils at this location consist of sandy silt extending to a depth of approximately 4.5 feet underlain by silty clay to a depth of ten feet. Silty sand extends from 10 feet below surface to depths of at least 20 feet. Groundwater was encountered at an approximate depth of 14 feet during drilling and 14.79 feet during groundwater sampling.

During borehole advancement, field screening indicated potential impacts (field screening measurements greater than 10 units) at a depth of 12.5 feet. The highest field screening measurement (11.3 instrument units) was measured at a depth of 12.5

feet. Based on this, a soil sample from DP-B was collected from a depth between 12 and 12.5 feet and submitted for laboratory analysis of VOCs and TPH. No VOCs or TPH were identified in the soil sample at concentrations above laboratory detection levels.

A groundwater sample was collected and submitted for laboratory analysis of VOCs. PCE was identified in groundwater at a concentration of 12.3 ug/L. This concentration exceeds the MCL for PCE (5 ug/L). No other VOCs were identified in groundwater at this location.

Based on field screening and laboratory analysis, groundwater at DP-B **DOES** appear to be impacted.

- DP-C was conducted in the western portion of the conjoined structures on Section 3 of the Subject Property, and southwest of identified chlorinated solvent impact at DP-9. This boring extended to a depth of twenty feet and was converted into a temporary groundwater monitoring well. Subsurface soils at this location consist of silty clay and sandy silt extending to a depth of approximately four feet underlain by silty sand to a depth of 8.5 feet and silty clay to a depth of ten feet. Silty sand extends from 10 feet below surface to depths of at least 20 feet. Groundwater was encountered at an approximate depth of 14.5 feet during drilling and 16.17 feet during groundwater sampling.

During borehole advancement, field screening indicated potential impacts (field screening measurements greater than 10 units) at depths between 9.5 feet and 11.5 feet. The highest field screening measurement (39.5 instrument units) was measured at a depth of 11.5 feet. Based on this, a soil sample from DP-C was collected from a depth between 12 and 12.5 feet and submitted for laboratory analysis of VOCs and TPH. No VOCs or TPH were identified in the soil sample at concentrations above laboratory detection levels.

A groundwater sample was collected and submitted for laboratory analysis of VOCs. PCE was identified in groundwater at a concentration of 19.3 ug/L. This concentration exceeds the MCL for PCE (5 ug/L). No other VOCs were identified in groundwater at this location.

Based on field screening and laboratory analysis, groundwater at DP-B **DOES** appear to be impacted.

- DP-D was conducted in the central portion of the conjoined structures on Section 3 of the Subject Property (enclosure area), and southeast of identified chlorinated solvent impact at DP-9. This boring extended to a depth of twenty feet and was converted into a temporary groundwater monitoring well. Subsurface soils at this location consist of gravel, sandy silt and silty sand extending to a depth of approximately 4 feet underlain by silty clay to a depth of nine feet. Silty sand extends from 9 feet below surface to depths of at least 20 feet. Groundwater was encountered at an

approximate depth of 15 feet during drilling and 15.43 feet during groundwater sampling.

During borehole advancement, field screening indicated potential impacts (field screening measurements greater than 10 units) at a depth of 8.5 feet and between 10.5 feet and 13.5 feet. The highest field screening measurement (110.5 instrument units) was measured at a depth of 13.5 feet. Based on this, a soil sample from DP-D was collected from a depth between 13 and 13.5 feet and submitted for laboratory analysis of VOCs and TPH. No VOCs or TPH were identified in the soil sample at concentrations above laboratory detection levels.

A groundwater sample was collected and submitted for laboratory analysis of VOCs. PCE was identified in groundwater at a concentration of 5,150 ug/L, TCE was identified at a concentration of 148 ug/L and cis 1,2-DCE was identified in groundwater at a concentration of 639 ug/L. These reported concentrations exceed MCLs (5 ug/L for PCE, 5 ug/L for TCE and 70 ug/L for cis 1,2-DCE).

Based on field screening and laboratory analysis, groundwater at DP-B **DOES** appear to be impacted.

- DP-E was conducted near the southern property boundary in Section 3 and south of identified chlorinated solvent impact at DP-9. This boring extended to a depth of twenty feet and was converted into a temporary groundwater monitoring well. Subsurface soils at this location consist of sandy silt and silty sand extending to a depth of approximately 10 feet underlain by silty clay to a depth of 11 feet. Silty sand extends from 11 feet below surface to a depth of 17.5 feet and is underlain by silty clay to a depth of 18.5 feet. Silty sand extends from 18.5 feet to depths of at least 20 feet. Groundwater was encountered at an approximate depth of 14 feet during drilling and 15.42 feet during groundwater sampling.

During borehole advancement, slightly elevated field screening values were obtained at this location. However, at no area did field screening indicate likely impacts and the highest field screening measurement was 2.7 units. Based on this, no soil sample was collected from DP-E for laboratory analysis.

A groundwater sample was collected and submitted for laboratory analysis of VOCs. PCE was identified in groundwater at a concentration of 12.5 ug/L. This concentration exceeds the MCL for PCE (5 ug/L). No other VOCs were identified in groundwater at this location.

Based on laboratory analysis, groundwater at DP-E **DOES** appear to be impacted.

- DP-F was conducted near the southern property boundary in Section 3 and south of identified chlorinated solvent impact at B-3/TMW-3. This boring extended to a depth of twenty feet and was converted into a temporary groundwater monitoring well. Subsurface soils at this location consist of sandy silt extending to a depth of



approximately 6 feet underlain by silty sand to a depth at least 20 feet. Groundwater was encountered at an approximate depth of 13.4 feet during drilling and 15.31 feet during groundwater sampling.

Field screening during borehole advancement did not indicate likely impacts. Based on this, no soil sample was collected from DP-F for laboratory analysis.

A groundwater sample was collected and submitted for laboratory analysis of VOCs. PCE was identified in groundwater at a concentration of 47.7 ug/L. This concentration exceeds the MCL for PCE (5 ug/L). No other VOCs were identified in groundwater at this location.

Based on laboratory analysis, groundwater at DP-F **DOES** appear to be impacted.

- DP-G was conducted near the southern property boundary in Section 3, and southeast of identified chlorinated solvent impact at B-3/TMW-3. This boring extended to a depth of twenty eight feet and was converted into a temporary groundwater monitoring well. Subsurface soils at this location consist of sandy silt and silty sand extending to a depth of approximately 12.5 feet underlain by silty clay to a depth of 24 feet. Silty sand extends from 24 feet below surface to a depth of 25 feet and is underlain by sandy silt to a depth of at least 28 feet. No groundwater was encountered during drilling. However, groundwater was noted at a depth of and 15.18 feet during groundwater sampling.

During borehole advancement, slightly elevated field screening values were obtained. However, at no area did field screening indicate likely impacts and the highest field screening measurement was 1.3 units. Based on this, no soil sample was collected from DP-G for laboratory analysis.

A groundwater sample was collected and submitted for laboratory analysis of VOCs. PCE was identified in groundwater at a concentration of 154 ug/L, TCE was identified at a concentration of 14.4 ug/L and cis 1,2-DCE was identified in groundwater at a concentration of 28.4 ug/L. The reported concentrations for PCE and TCE exceed MCLs (5 ug/L).

Based on laboratory analysis, groundwater at DP-G **DOES** appear to be impacted.

- The structure in Section 3 of the Subject Property contains a basement. The basement is centrally located in the northern portion of the conjoined structures and extends approximately 14 to 15 feet below ground surface. The basement contains a sump. The sump is located near the southeast corner of the basement. A groundwater sample was collected from the sump on December 2, 2013 and submitted for laboratory analysis of VOCs. No VOCs were identified.

## 7.0 RESULTS OF PHASE II STEP II ENVIRONMENTAL ASSESSMENT – POTENTIAL PETROLEUM IMPACTS

From the initial Phase II ESA, petroleum impacted soil and groundwater were identified in soil borings/temporary monitoring wells B-6/TMW-6, B-7/TMW-7 and B-8/TMW-8. In a soil sample collected from B-8/TMW-8, ethylbenzene (23 mg/Kg), 1,2,4-trimethylbenzene (94.9 mg/Kg) and naphthalene (29.1 mg/Kg) were identified at concentrations exceeding residential RSLs (5.4 mg/Kg, 620 mg/Kg and 3.6 mg/Kg, respectively). Ethylbenzene also exceeded OCC screening levels (15 mg/Kg). TPH was identified at concentrations exceeding ODEQ Tier 1 Generic Cleanup Levels for residential and industrial use and OCC screening levels. In groundwater samples from B-8/TMW-8, reported concentration for benzene (63.5 mg/L) exceeded the MCL and OCC screening level (5 mg/L). TPH-GRO (38.8 mg/L) and TPH-DRO (54.2 mg/L) exceeded ODEQ Tier 1 Generic Cleanup Levels for residential and industrial use (1 mg/L) and the OCC action level (2 mg/L). Results of soil analysis used to assess petroleum impacts (including those from the initial Phase II ESA) are shown on Table 3.

In groundwater samples from B-7/TMW-7, reported concentrations for benzene (269 ug/L), toluene (3,330 ug/L) and ethylbenzene (2,340 ug/L) exceeded MCLs and OCC screening levels (5 ug/L, 1,000 ug/L and 700 ug/L, respectively). TPH-GRO (23.2 mg/L) exceeded ODEQ Tier 1 Generic Cleanup Levels for residential and industrial use (1 mg/L) and the OCC action level (2 mg/L). As part of Phase II Step II ESA, DP-H through DP-K were conducted to evaluate the potential for petroleum impacts to groundwater beneath the conjoined structures at the northern portion of Section 3 of the Subject Property and to evaluate potential for vapor intrusion from previously identified petroleum impacts north and northeast of Section 3 of the Subject Property. Based on field screening, no soil samples were collected as part of Phase II Step II ESA. Results of groundwater analysis used to assess petroleum impacts (including those from the initial Phase II ESA) are shown on Table 4. For groundwater, reported concentrations for BTEX are compared to Federal Drinking Water Standards (MCLs) / OCC screening levels. For TPH, groundwater is compared to Oklahoma Department of Environmental Quality (ODEQ) Tier 1 Generic Cleanup Levels for residential soils (Risk-Based Levels for Total Petroleum Hydrocarbons, ODEQ, October 2012) and to OCC screening levels. Results of the Phase II Step II ESA for potential petroleum impacts are as follows:

- DP-H was conducted north of the conjoined structures on Section 3 of the Subject Property, and south of identified petroleum impacts at Section 1 of the property (north of Main Street). This boring extended to a depth of twenty feet and was converted into a temporary groundwater monitoring well. Subsurface soils at this location consist of sand and silty sand extending to depths of at least 20 feet. Groundwater was encountered at an approximate depth of 14.5 feet during drilling and 13.84 feet during groundwater sampling.

During borehole advancement, slightly elevated field screening values were obtained at this location. However, at no area did field screening indicate likely impacts and the highest field screening measurement was 0.5 units. Based on this, no soil sample was collected from DP-H for laboratory analysis.

A groundwater sample was collected and submitted for laboratory analysis of BTEX and TPH. These constituents were not identified above laboratory detection levels. A duplicate sample was collected and analyzed for VOCs. No BTEX was identified. Chloroform was identified and is believed to be a laboratory artifact.

Based on field screening and laboratory analysis, groundwater at DP-H DOES NOT appear to be impacted by petroleum constituents.

- DP-I was conducted north of the conjoined structures on Section 3 of the Subject Property, and south of identified petroleum impacts at Section 1 of the property (north of Main Street). This boring extended to a depth of nineteen feet and was converted into a temporary groundwater monitoring well. Subsurface soils at this location consist of sand and silty sand extending to a depth of 18 feet and underlain by sandy silt to a depth of at least 20 feet. Groundwater was encountered at an approximate depth of 12.5 feet during drilling and 13.62 feet during groundwater sampling.

During borehole advancement, slightly elevated field screening values were obtained at this location. However, at no area did field screening indicate likely impacts and the highest field screening measurement was 0.2 units. Based on this, no soil sample was collected from DP-I for laboratory analysis.

A groundwater sample was collected and submitted for laboratory analysis of BTEX and TPH. These constituents were not identified above laboratory detection levels.

Based on field screening and laboratory analysis, groundwater at DP-I DOES NOT appear to be impacted by petroleum constituents.

- DP-J was conducted north of the northeast corner of conjoined structures on Section 3 of the Subject Property, and south of identified petroleum impacts at Sections 1 or 2 of the property (north of Main Street). This boring extended to a depth of 19.5 feet and was converted into a temporary groundwater monitoring well. Subsurface soils at this location consist of sand extending to a depth of approximately 3 feet underlain by silty clay to a depth of 4 feet and sand to a depth of 5 feet. Silty clay extends from 5 feet below surface to a depth of 11 feet and is underlain by sandy silt to a depth of 13 feet. Silty sand extends from 13 feet to depths of at least 19.5 feet. Groundwater was encountered at an approximate depth of 13 feet during drilling and 13.16 feet during groundwater sampling.

During borehole advancement, slightly elevated field screening values were obtained at this location. However, at no area did field screening indicate likely impacts and the highest field screening measurement was 1.8 units. Based on this, no soil sample was collected from DP-J for laboratory analysis.

A groundwater sample was collected and submitted for laboratory analysis of BTEX and TPH. These constituents were not identified above laboratory detection levels.

Based on field screening and laboratory analysis, groundwater at DP-J DOES NOT appear to be impacted by petroleum constituents.

- DP-K was conducted east of the northeast corner of conjoined structures on Section 3 of the Subject Property, and south of identified petroleum impacts at Sections 1 or 2 of the property (north of Main Street). This boring extended to a depth of twenty feet and was converted into a temporary groundwater monitoring well. Subsurface soils at this location consist of sand extending to a depth of approximately 3 feet underlain by silty clay to a depth of 4 feet and sand to a depth of 5 feet. Sandy silt extends from 5 feet below surface to a depth of 11 feet and is underlain by silty sand and sand to a depth of at least 20 feet. Groundwater was encountered at an approximate depth of 12 feet during drilling and 13.53 feet during groundwater sampling.

During borehole advancement, slightly elevated field screening values were obtained at this location. However, at no area did field screening indicate likely impacts and the highest field screening measurement was 1.8 units. Based on this, no soil sample was collected from DP-K for laboratory analysis.

A groundwater sample was collected and submitted for laboratory analysis of BTEX and TPH. These constituents were not identified above laboratory detection levels.

Based on field screening and laboratory analysis, groundwater at DP-K DOES NOT appear to be impacted by petroleum constituents.

## 8.0 CONCLUSIONS

Initial Phase II ESA indicated six general areas of apparent impact at the Subject Property. Phase II Step II ESA activities were conducted in November and December 2013 to further characterize two of the areas of apparent impact (the identified chlorinated solvent plume in Section 3 of the Subject Property and the identified petroleum plume in Sections 1, 2 and 4 of the Subject Property). Findings of the Phase II Step II ESA are as follows:

- 1) The estimated extent of chlorinated solvent plume in groundwater based on assessment data obtained as part of the initial Phase II ESA and as part of Phase II Step II ESA is shown on Figure 5. It is apparent that much of the central and western portions of the southern building on Section 3 of the Subject Property overlie impacted groundwater. The southwest portion of the northern building on Section 3 of the Subject Property also overlies impacted groundwater. The plume appears to be delineated to the northwest, north, northeast and southeast. However, it is apparent that impacted groundwater has migrated off-site to the south. Potential for indoor vapor intrusion in buildings on Section 3 associated with the subsurface chlorinated solvent plume cannot be ruled out. Reported concentrations of PCE and TCE in some of the groundwater exceeds general risk based screening levels for vapor intrusion as obtained from the current EPA/OSWER Vapor Intrusion Screening Level (VISL) calculator using a commercial

exposure scenario with a  $1 \times 10^{-5}$  target risk for carcinogens and a target hazard quotient of 1.

- 2) The estimated extent of petroleum impacts to groundwater based on data obtained as part of the initial Phase II ESA and as part of Phase II Step II ESA is shown on Figure 6. It does not appear that petroleum contaminants have migrated from areas of identified impact at Sections 1, 2 and 4 to beneath the northern portion of the conjoined structures located on Section 3 of the Subject Property. Based on distance to known impacts, based on no indication of petroleum contaminants in groundwater along the northern perimeter of the conjoined structures and based on depth to groundwater in this area (greater than ten feet), it appears that vapor intrusion in the conjoined structures on Section 3 from these identified off-site areas of petroleum impact can be ruled out.

The other four areas of impact identified during the initial Phase II ESA were not further evaluated as part of the November and December 2013 assessment. Conclusions and recommendations regarding these areas of impact area as presented in the initial Phase II ESA report (May 2013).

## 9.0 RECOMMENDATIONS

The following recommendations are made based on the initial Phase II ESA and subsequent findings from the Phase II Step II ESA.

- 1) Impacts to subsurface soils and/or groundwater by VOCs, TPH, lead and/or arsenic were identified at multiple locations beneath the conjoined structures in Section 3 of the Subject Property. It is possible that contaminants and/or buried equipment (such as tanks) may be present in areas not investigated and/or that were not identified. Also, reported concentrations for VOCs suggest the potential for an on-going continual source (e.g. highly impacted soils, free phase product). Appropriate measures should be taken if unidentified areas of impacted soils, groundwater or underground storage tanks are encountered during future development of the property. Any contaminated materials excavated or removed during site development, construction or drilling of piers will require appropriate management (which may require treatment and/or disposal). Appropriate health and safety measures should be taken to limit exposure to workers and/or public to impacted media.
- 2) A chlorinated solvent plume has been identified beneath approximately the southeast quarter of the conjoined structures located on Section 3 of the Subject Property. The need for vapor intrusion mitigation measures should be addressed prior to constructing or inhabiting any structures at this location.
- 3) Petroleum impacted soils and/or groundwater are evident in Sections 1, 2 and 4 of the Subject Property. LUST cases have been closed at these areas by the OCC with contaminants remaining in place. If these Sections are to be developed, it is recommended that the OCC be notified to determine if additional measures are warranted



to address petroleum impacted soils and/or groundwater based on updated information and/or changes in property use. Any contaminated materials excavated or removed during site development, construction or drilling of piers in these areas will require appropriate management (which may require treatment and/or disposal). Appropriate health and safety measures should be taken to limit exposure to workers and/or public to impacted media. It does not appear that impacts from Sections 1, 2 and 4 of the Subject Property affect Section 3 of the Subject Property.

- 4) It is recommended that controls be put into place on the Subject Property to prevent access or exposure to subsurface soils and/or groundwater. Any potentially impacted soil or groundwater generated at the site should be analyzed to ensure proper management/disposal.
- 5) It appears that chlorinated solvents have migrated through groundwater off-site to the south of the Subject Property, which could impact neighboring properties. Additional investigation would be needed to determine the extent of migration.

## **10.0 LIMITATIONS AND EXCEPTIONS**

The findings and opinions conveyed are based on information obtained from a variety of sources which Cardinal believes to be reliable. Cardinal has no control over testing and analysis services and therefore, disclaims any responsibility for errors and omissions arising therefrom. Presumed locations of RECs are an approximation based on addresses included in historical directories and/or Sanborn Maps. It is possible that contaminants could be present in areas not investigated and/or that were not identified. Drawings included within this report are presented for the purpose of assisting the reader in visualizing the property and no physical boundary survey of the property was performed. The findings of this report are valid as of the date of the investigation. However, changes in the conditions of the Subject Property can occur with the passage of time, whether due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation, broadening of knowledge, or from other reasons. Cardinal assumes no responsibility to monitor any changes at the Subject Property or to advise if there are any changes as to what constitutes hazardous materials or substances or petroleum products. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside of Cardinal control.

## Figures



Base Map: Google Earth



## PROJECT

**Fred Jones Building Complex**

### LOCATION

900 W. Main Street  
Oklahoma City

## PREPARED FOR

City of Oklahoma City

## DRAWING TITLE

Figure 1. Site Vicinity Map

Project No. 11050

Drawn By **CSS**

Checked By **MV**

Date: 5/31/2013

Scale 1" approx 400 ft

Issued For.

Drawing No.



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CA#2054, expiration date 06.30.2014



One inch approximately 400 ft





Base Map: Google Earth



Recognized Environmental Condition (REC)



One inch approximately 100 ft

#### PROJECT

Fred Jones Building Complex

#### LOCATION

900 W. Main Street  
Oklahoma City

#### PREPARED FOR

City of Oklahoma City

#### DRAWING TITLE

Figure 2. Identified RECs

Project No. 11050

Drawn By CSS

Checked By MV

Date: 5/31/2013

Scale 1" approx 100 ft

Issued For:

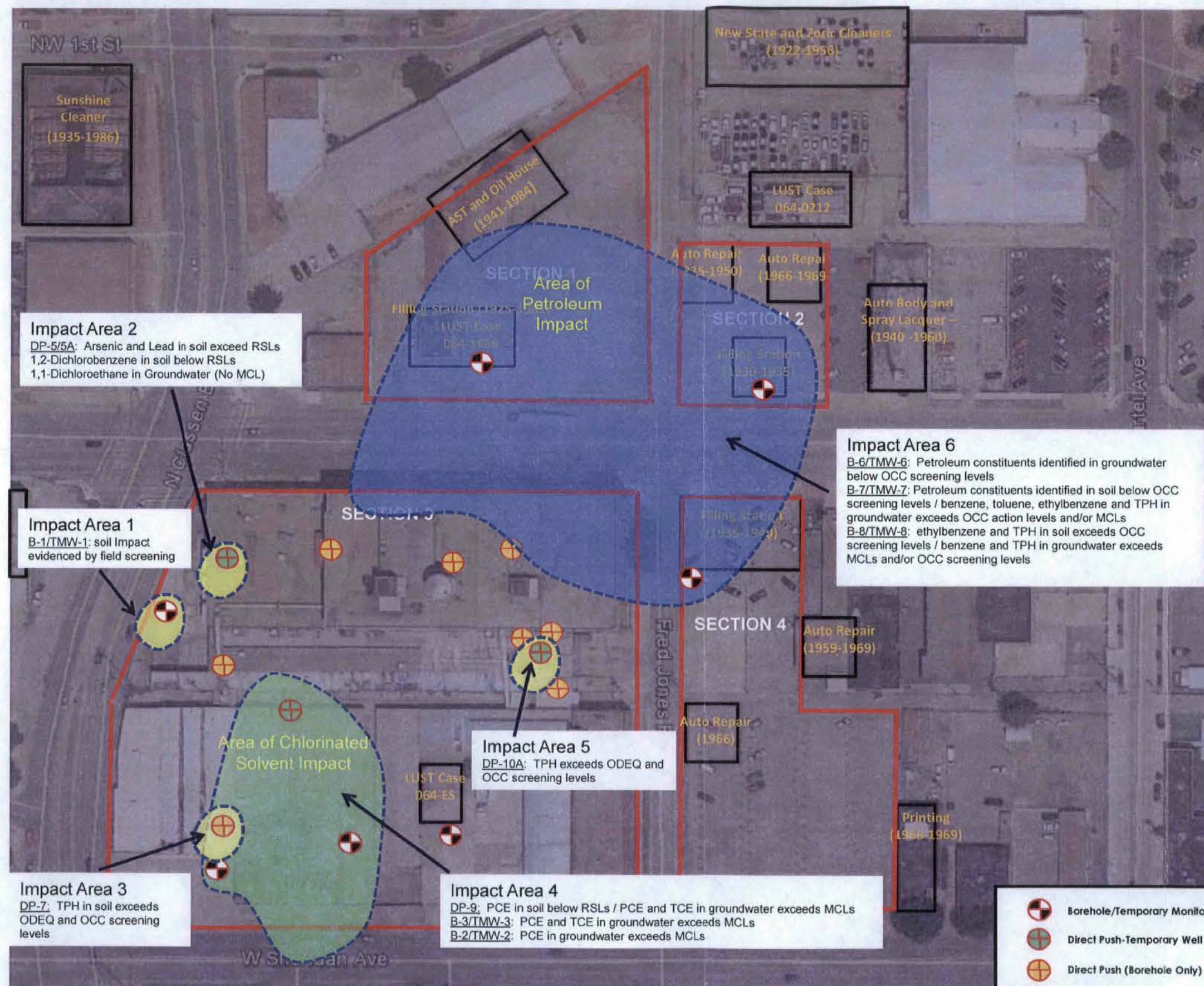
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Base Map: Google Earth

#### PROJECT

Fred Jones Building Complex

#### LOCATION

900 W. Main Street  
Oklahoma City

#### PREPARED FOR

City of Oklahoma City

#### DRAWING TITLE

Figure 3:  
Estimated Areas of Impact from Initial  
Phase II Environmental Site  
Assessment

Project No. 11050

Drawn By CSS

Checked By MV

Date: 7/31/2013

Scale 1" approx 100 ft

Issued For.

Drawing No.

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## Tables

**Table 1**  
**FRED JONES BUILDING COMPLEX (900 W MAIN STREET, OKLAHOMA CITY)**  
**SOIL SAMPLE RESULTS USED TO EVALUATE CHLORINATED SOLVENT IMPACTS**

| Sample location                 | Date       | Tetrachloroethene (PCE)<br>(mg/Kg) | Trichloroethene (TCE)<br>(mg/Kg) | cis 1,2-Dichloroethene<br>(mg/Kg) | Vinyl Chloride<br>(mg/Kg) | 1,1-Dichloroethane<br>(mg/Kg) | Acetone<br>(mg/Kg) |
|---------------------------------|------------|------------------------------------|----------------------------------|-----------------------------------|---------------------------|-------------------------------|--------------------|
| DP-1 (3.5-5 ft)                 | 4/24/2013  | <0.025                             | <0.025                           | <0.025                            | <0.025                    | <0.025                        | <0.1               |
| DP-2 (0 - 1.5 ft)               | 4/24/2013  | <0.025                             | <0.025                           | <0.025                            | <0.025                    | <0.025                        | <0.1               |
| DP-3 (0-1 ft)                   | 4/24/2013  | <0.025                             | <0.025                           | <0.025                            | <0.025                    | <0.025                        | <0.1               |
| DP-4 (0- 1 ft)                  | 4/24/2013  | <0.025                             | <0.025                           | <0.025                            | <0.025                    | <0.025                        | <0.1               |
| DP-5 (2- 3 ft)                  | 4/24/2013  | <0.025                             | <0.025                           | <0.025                            | <0.025                    | <0.025                        | <0.1               |
| Duplicate (DP-5 2-3 ft)         | 4/24/2013  | <0.025                             | <0.025                           | <0.025                            | <0.025                    | <0.025                        | <0.1               |
| DP-6 (1 to 2 ft)                | 4/24/2013  | <0.025                             | <0.025                           | <0.025                            | <0.025                    | <0.025                        | <0.1               |
| DP-7 (0-1 ft)                   | 4/24/2013  | <0.025                             | <0.025                           | <0.025                            | <0.025                    | <0.025                        | <0.1               |
| DP-8 (0-1 ft)                   | 4/24/2013  | <0.025                             | <0.025                           | <0.025                            | <0.025                    | <0.025                        | <0.1               |
| DP-9 (0-1 ft)                   | 4/24/2013  | 0.0329                             | <0.025                           | <0.025                            | <0.025                    | <0.025                        | <0.1               |
| DP-9 (13-14 ft)                 | 4/24/2013  | <0.025                             | <0.025                           | <0.025                            | <0.025                    | <0.025                        | <0.1               |
| DP-10A (4-5 ft)                 | 4/24/2013  | <0.025                             | <0.025                           | <0.025                            | <0.025                    | <0.025                        | <0.1               |
| DP-10A (14-15 ft)               | 4/24/2013  | <0.025                             | <0.025                           | <0.025                            | <0.025                    | <0.025                        | <0.1               |
| B-1 /TMW-1 (9-9.5')             | 5/7/2013   | <0.025                             | <0.025                           | <0.025                            | <0.025                    | <0.025                        | <0.1               |
| B-6/TMW-6 (17.5-18 ft)          | 5/6/2013   | <0.025                             | <0.025                           | <0.025                            | <0.025                    | <0.025                        | <0.1               |
| B-7/TMW-7 (17.5-18 ft)          | 5/6/2013   | <0.025                             | <0.025                           | <0.025                            | <0.025                    | <0.025                        | 0.653              |
| B-8/TWM-8 (10.5-11 ft)          | 5/6/2013   | <0.025                             | <0.025                           | <0.025                            | <0.025                    | <0.025                        | 29.1               |
| DP-A (11.5 ft)                  | 11/19/2013 | 0.0255                             | <0.025                           | <0.025                            | <0.025                    | <0.025                        | <0.1               |
| DP-B (12.5 ft)                  | 11/19/2013 | <0.025                             | <0.025                           | <0.025                            | <0.025                    | <0.025                        | <0.1               |
| DP-C (12.5 ft)                  | 11/19/2013 | <0.025                             | <0.025                           | <0.025                            | <0.025                    | <0.025                        | <0.1               |
| DP-D (13.5ft)                   | 11/19/2013 | <0.025                             | <0.025                           | <0.025                            | <0.025                    | <0.025                        | <0.1               |
|                                 |            |                                    |                                  |                                   |                           |                               |                    |
| RSL-Residential                 |            | 22                                 | 0.91                             | 160                               | 0.06                      | 3.3                           | 61,000             |
| RSL - Industrial                |            | 110                                | 6.4                              | 2,000                             | 1.7                       | 17                            | 630,000            |
| RSL - Protection of Groundwater |            | 0.0044                             | 0.00016                          | 0.0082                            | 0.0000053                 | 0.00068                       | 2.4                |

Apparent areas of Impact are shown in Red. For VOCs and TPH any detection is an apparent impact.

RSL - Industrial = EPA Regional Screening Level for Industrial Soil (Regional Screening level Summary Table, November 2013)

RSL - Residential = EPA Regional Screening Level for Residential Soil (Regional Screening level Summary Table, November 2013)

RSL -Protection of Groundwater= EPA Regional Screening Level for Residential Soil (Regional Screening level Summary Table, November 2013)

**Table 2**  
**FRED JONES BUILDING COMPLEX (900 W MAIN STREET, OKLAHOMA CITY)**  
**RESULTS OF GROUNDWATER SAMPLING TO EVALUATE CHLORINATED SOLVENT PLUME**

| Sample Location                               | Date       | Tetrachloroethene (PCE)<br>(ug/L) | Trichloroethene (TCE)<br>(ug/L) | cis 1,2-Dichloroethene<br>(ug/L) | Vinyl Chloride<br>(ug/L) | 1,1-Dichloroethane<br>(ug/L) | Acetone<br>(ug/L) |
|-----------------------------------------------|------------|-----------------------------------|---------------------------------|----------------------------------|--------------------------|------------------------------|-------------------|
| DP-5A                                         | 4/25/2013  | <5                                | <5                              | <5                               | <5                       | 10.2                         | <20               |
| DP-9                                          | 4/25/2013  | 586                               | 6.72                            | 7.89                             | <5                       | <5                           | <20               |
| DP-10A                                        | 4/25/2013  | <5                                | <5                              | <5                               | <5                       | <5                           | <20               |
| B-1 /TMW-1                                    | 5/10/2013  | <5                                | <5                              | <5                               | <5                       | <5                           | <20               |
| B-2/TMW-2                                     | 5/10/2013  | 13.9                              | <5                              | <5                               | <5                       | <5                           | <20               |
| B-3/TMW-3                                     | 5/10/2013  | 1,010                             | 6.26                            | <5                               | <5                       | <5                           | <20               |
| B-4/TMW-4                                     | 5/10/2013  | <5                                | <5                              | <5                               | <5                       | <5                           | <20               |
| B-5/TMW-5                                     | 5/10/2013  | <5                                | <5                              | <5                               | <5                       | <5                           | <20               |
| B-6/TMW-6                                     | 5/10/2013  | <5                                | <5                              | <5                               | <5                       | <5                           | 63.2              |
| Duplicate 1                                   | 5/10/2013  | <5                                | <5                              | <5                               | <5                       | <5                           | 60.7              |
| B-7/TMW-7                                     | 5/10/2013  | <100                              | <100                            | <100                             | <100                     | <100                         | <400              |
| B-8/TWM-8                                     | 5/10/2013  | <5                                | <5                              | <5                               | <5                       | <5                           | <5                |
| DP-A                                          | 11/27/2013 | 16                                | <5                              | <5                               | <5.00                    | <5                           | <20.0             |
| DP-B                                          | 11/27/2013 | 12.3                              | <5                              | <5                               | <5.00                    | <5                           | <20.0             |
| DP-C                                          | 11/27/2013 | 19.3                              | <5                              | <5                               | <5.00                    | <5                           | <20.0             |
| DP-D                                          | 11/27/2013 | 5,150                             | 148                             | 639                              | <5.00                    | <5                           | <20.0             |
| DP-E                                          | 11/27/2013 | 12.5                              | <5                              | <5                               | <5.00                    | <5                           | <20.0             |
| DP-F                                          | 11/27/2013 | 47.7                              | <5                              | <5                               | <5.00                    | <5                           | <20.0             |
| DP-G                                          | 11/27/2013 | 154                               | 14.4                            | 28.4                             | <5.00                    | <5                           | <20.0             |
| Federal Drinking<br>Water Standards<br>(MCLs) |            | 5                                 | 5                               | 70                               | 2                        | None                         |                   |

Apparent areas of Impact are shown in Red. For VOCs and TPH any detection is an apparent impact.  
Yellow outlined values are areas of apparent impact that exceed Federal Drinking Water Standards (MCLs)  
VOCs not included on table are below Laboratory Detection Levels



**Table 3**  
**FRED JONES BUILDING COMPLEX (900 W MAIN STREET, OKLAHOMA CITY)**  
**RESULTS OF SOIL TESTING TO EVALUATE PETROLEUM PLUME**

| Sample location                        | Date       | Benzene<br>(mg/Kg) | Toluene<br>(mg/Kg) | Ethylbenzene<br>(mg/Kg) | Xylenes<br>(mg/Kg) | Isopropylbenzene<br>(mg/Kg) | n-Butylbenzene<br>(mg/Kg) | n-Propylbenzene<br>(mg/Kg) | sec-Butylbenzene<br>(mg/Kg) | 1,2-Dichlorobenzene<br>(mg/Kg) | 1,2,4-Trimethylbenzene<br>(mg/Kg) | 1,3,5-Trimethylbenzene<br>(mg/Kg) | 4-Isopropyltoluene<br>(mg/Kg) | Naphthalene<br>(mg/Kg) | TPH-GRO<br>(mg/Kg) | TPH-DRO<br>(mg/Kg) | TPH-ORO<br>(mg/Kg) |
|----------------------------------------|------------|--------------------|--------------------|-------------------------|--------------------|-----------------------------|---------------------------|----------------------------|-----------------------------|--------------------------------|-----------------------------------|-----------------------------------|-------------------------------|------------------------|--------------------|--------------------|--------------------|
| DP-1 (3.5-5 ft)                        | 4/24/2013  | <0.025             | <0.025             | <0.025                  | <0.05              | <0.025                      | <0.025                    | <0.025                     | <0.025                      | <0.025                         | <0.025                            | <0.025                            | <0.025                        | <0.025                 | <50                | <50                | <50                |
| DP-2 (0 - 1.5 ft)                      | 4/24/2013  | <0.025             | <0.025             | <0.025                  | <0.05              | <0.025                      | <0.025                    | <0.025                     | <0.025                      | <0.025                         | <0.025                            | <0.025                            | <0.025                        | <0.025                 | <50                | <50                | <50                |
| DP-3 (0-1 ft)                          | 4/24/2013  | <0.025             | <0.025             | <0.025                  | <0.05              | <0.025                      | <0.025                    | <0.025                     | <0.025                      | <0.025                         | <0.025                            | <0.025                            | <0.025                        | <0.025                 | <50                | <50                | <50                |
| DP-4 (0- 1 ft)                         | 4/24/2013  | <0.025             | <0.025             | <0.025                  | <0.05              | <0.025                      | <0.025                    | <0.025                     | <0.025                      | <0.025                         | <0.025                            | <0.025                            | <0.025                        | <0.025                 | <50                | <50                | <50                |
| DP-5 (2- 3 ft)                         | 4/24/2013  | <0.025             | <0.025             | <0.025                  | <0.05              | <0.025                      | <0.025                    | <0.025                     | <0.025                      | <0.025                         | 0.352                             | <0.025                            | <0.025                        | <0.025                 | <50                | <50                | <50                |
| Duplicate (DP-5 2-3 ft)                | 4/24/2013  | <0.025             | <0.025             | <0.025                  | <0.05              | <0.025                      | <0.025                    | <0.025                     | <0.025                      | <0.025                         | 0.268                             | <0.025                            | <0.025                        | <0.025                 | <50                | <50                | <50                |
| DP-6 (1 to 2 ft)                       | 4/24/2013  | <0.025             | <0.025             | <0.025                  | <0.05              | <0.025                      | <0.025                    | <0.025                     | <0.025                      | <0.025                         | <0.025                            | <0.025                            | <0.025                        | <0.025                 | <50                | <50                | <50                |
| DP-7 (0-1 ft)                          | 4/24/2013  | <0.025             | <0.025             | <0.025                  | <0.05              | <0.025                      | <0.025                    | <0.025                     | <0.025                      | <0.025                         | <0.025                            | <0.025                            | <0.025                        | <0.025                 | <50                | 1,140              | 447                |
| DP-8 (0-1 ft)                          | 4/24/2013  | <0.025             | <0.025             | <0.025                  | <0.05              | <0.025                      | <0.025                    | <0.025                     | <0.025                      | <0.025                         | <0.025                            | <0.025                            | <0.025                        | <0.025                 | <50                | <50                | <50                |
| DP-9 (0-1 ft)                          | 4/24/2013  | <0.025             | <0.025             | <0.025                  | <0.05              | <0.025                      | <0.025                    | <0.025                     | <0.025                      | <0.025                         | <0.025                            | <0.025                            | <0.025                        | <0.025                 | <50                | <50                | <50                |
| DP-9 (13-14 ft)                        | 4/24/2013  | <0.025             | <0.025             | <0.025                  | <0.05              | <0.025                      | <0.025                    | <0.025                     | <0.025                      | <0.025                         | <0.025                            | <0.025                            | <0.025                        | <0.025                 | <50                | <50                | <50                |
| DP-10A (4-5 ft)                        | 4/24/2013  | <0.025             | <0.025             | <0.025                  | <0.05              | <0.025                      | <0.025                    | <0.025                     | <0.025                      | <0.025                         | <0.025                            | <0.025                            | <0.025                        | <0.025                 | <50                | 80.9               | 78                 |
| DP-10A (14-15 ft)                      | 4/24/2013  | <0.025             | <0.025             | <0.025                  | <0.025             | <0.025                      | <0.025                    | <0.025                     | <0.025                      | <0.025                         | <0.025                            | <0.025                            | <0.025                        | <0.025                 | <50                | <50                | <50                |
| B-1/TMW-1 (9-9.5')                     | 5/7/2013   | <0.025             | <0.025             | <0.025                  | <0.025             | <0.025                      | <0.025                    | <0.025                     | <0.025                      | <0.025                         | <0.025                            | <0.025                            | <0.025                        | <0.025                 | <50                | <50                | <50                |
| B-6/TMW-6 (17.5-18 ft)                 | 5/6/2013   | <0.025             | <0.025             | <0.025                  | <0.025             | <0.025                      | <0.025                    | <0.025                     | <0.025                      | <0.025                         | <0.025                            | <0.025                            | <0.025                        | <0.025                 | <50                | <50                | <50                |
| B-7/TMW-7 (17.5-18 ft)                 | 5/6/2013   | <0.025             | 1.36               | 0.666                   | 3.31               | 0.0511                      | 0.0948                    | 0.239                      | <0.025                      | <0.025                         | 1.19                              | 0.415                             | 0.0357                        | 0.653                  | <50                | <50                | <50                |
| B-8/TWM-8 (10.5-11 ft)                 | 5/6/2013   | <0.025             | <0.025             | 23                      | 22                 | 6.72                        | 11.9                      | 30.5                       | 4.46                        | <0.025                         | 94.9                              | 24.7                              | 2.52                          | 29.1                   | 3,460              | 464                | <50                |
| DP-A (11.5 ft)                         | 11/19/2013 | <0.025             | <0.025             | <0.025                  | <0.025             | <0.025                      | <0.025                    | <0.025                     | <0.025                      | <0.025                         | <0.025                            | <0.025                            | <0.025                        | <0.025                 | <50                | <50                | <50                |
| DP-B (12.5 ft)                         | 11/19/2013 | <0.025             | <0.025             | <0.025                  | <0.025             | <0.025                      | <0.025                    | <0.025                     | <0.025                      | <0.025                         | <0.025                            | <0.025                            | <0.025                        | <0.025                 | <50                | <50                | <50                |
| DP-C (12.5 ft)                         | 11/19/2013 | <0.025             | <0.025             | <0.025                  | <0.025             | <0.025                      | <0.025                    | <0.025                     | <0.025                      | <0.025                         | <0.025                            | <0.025                            | <0.025                        | <0.025                 | <50                | <50                | <50                |
| DP-D (13.5ft)                          | 11/19/2013 | <0.025             | <0.025             | <0.025                  | <0.025             | <0.025                      | <0.025                    | <0.025                     | <0.025                      | <0.025                         | <0.025                            | <0.025                            | <0.025                        | <0.025                 | <50                | <50                | <50                |
| OCC Screening Level (OAC 165.25-2-136) |            | 0.5                | 40                 | 15                      | 200                | None                        | None                      | None                       | None                        | None                           | None                              | None                              | None                          | None                   | 50/500^            |                    |                    |
| RSL-Residential                        |            | 1.1                | 5,000              | 5.4                     | 630                | None                        | 3,900                     | None                       | 7,800                       | 1,900                          | 62                                | 780                               | None                          | 3.6                    | 50*                |                    |                    |
| RSL - Industrial                       |            | 5.4                | 45,000             | 27                      | 2,700              | None                        | 51,000                    | None                       | 100,000                     | 9,800                          | 260                               | 10,000                            | None                          | 18                     | 500*               |                    |                    |
| RSL - Protection of Groundwater        |            | 0.0002             | 0.59               | 0.0015                  | 0.19               | None                        | 2.5                       | None                       | 4.6                         | 0.27                           | 0.021                             | 0.12                              | None                          | 0.00047                | None               |                    |                    |

Apparent areas of Impact are shown in Red. For VOCs and TPH any detection is an apparent impact.

Yellow outlined values are areas of apparent impact that exceed RSLs for residential use

RSL - Industrial = EPA Regional Screening Level for Industrial Soil (Regional Screening level Summary Table, November 2013)

RSL - Residential = EPA Regional Screening Level for Residential Soil (Regional Screening level Summary Table, November 2013)

RSL - Protection of Groundwater = EPA Regional Screening Level for Protection of Groundwater (Regional Screening level Summary Table, November 2013)

RSL for TPH - ODEQ Generic Cleanup Levels for Soil (October 2012)

VOCs not included on table are below Laboratory Detection Levels

^ IF BTEX is below action levels then OCC screening level for TPH is 500 mg/Kg

\* No RSLs are developed for TPH. ODEQ Tier 1 Generic Cleanup Levels for residential and industrial use are shown on this table.

For this table - TPH-GRO (C6 to C12), TPH-DRO (>C12 to C28), TPH-ORO (>C28 to C35)



**Table 4**  
**FRED JONES BUILDING COMPLEX (900 W MAIN STREET, OKLAHOMA CITY)**  
**RESULTS OF GROUNDWATER SAMPLING TO EVALUATE PETROLEUM PLUME**

| Sample Location                                  | Date       | Benzene<br>(ug/L) | Toluene<br>(ug/L) | Ethylbenzene<br>(ug/L) | Xylenes<br>(ug/L) | Isopropylbenzene<br>(ug/L) | n-Butylbenzene<br>(ug/L) | n-Propylbenzene<br>(ug/L) | sec-Butylbenzene<br>(ug/L) | 1,2,4-Trimethylbenzene<br>(ug/L) | 1,3,5-Trimethylbenzene<br>(ug/L) | 4-Isopropyltoluene<br>(ug/L) | Naphthalene<br>(ug/L) | TPH-GRO<br>(mg/L) | TPH-DRO<br>(mg/L) | TPH-ORO<br>(mg/L) |
|--------------------------------------------------|------------|-------------------|-------------------|------------------------|-------------------|----------------------------|--------------------------|---------------------------|----------------------------|----------------------------------|----------------------------------|------------------------------|-----------------------|-------------------|-------------------|-------------------|
| DP-5A                                            | 4/25/2013  | <5                | <5                | <5                     | <5                | <5                         | <5                       | <5                        | <5                         | <5                               | <5                               | <5                           | <5                    | <5                | <5                | <5                |
| DP-9                                             | 4/25/2013  | <5                | <5                | <5                     | <5                | <5                         | <5                       | <5                        | <5                         | <5                               | <5                               | <5                           | <5                    | <5                | <5                | <5                |
| DP-10A                                           | 4/25/2013  | <5                | <5                | <5                     | <5                | <5                         | <5                       | <5                        | <5                         | <5                               | <5                               | <5                           | <5                    | <5                | <5                | <5                |
| B-1 /TMW-1                                       | 5/10/2013  | <5                | <5                | <5                     | <5                | <5                         | <5                       | <5                        | <5                         | <5                               | <5                               | <5                           | <5                    | <5                | <5                | <5                |
| B-2/TMW-2                                        | 5/10/2013  | <5                | <5                | <5                     | <5                | <5                         | <5                       | <5                        | <5                         | <5                               | <5                               | <5                           | <5                    | <5                | <5                | <5                |
| B-3/TMW-3                                        | 5/10/2013  | <5                | <5                | <5                     | <5                | <5                         | <5                       | <5                        | <5                         | <5                               | <5                               | <5                           | <5                    | <5                | <5                | <5                |
| B-4/TMW-4                                        | 5/10/2013  | <5                | <5                | <5                     | <5                | <5                         | <5                       | <5                        | <5                         | <5                               | <5                               | <5                           | <5                    | <5                | <5                | <5                |
| B-5/TMW-5                                        | 5/10/2013  | <5                | <5                | <5                     | <5                | <5                         | <5                       | <5                        | <5                         | <5                               | <5                               | <5                           | <5                    | <5                | <5                | <5                |
| B-6/TMW-6                                        | 5/10/2013  | <5                | <5                | 133                    | 307.8             | 62.5                       | 29.3                     | 149                       | 15.2                       | 764                              | 265                              | 19.4                         | 139                   | <5                | <5                | <5                |
| Duplicate 1                                      | 5/10/2013  | <5                | <5                | 122                    | 290.1             | 62.4                       | 29.2                     | 274                       | 15.2                       | 1,460                            | 495                              | 20.1                         | 354                   | <5                | <5                | <5                |
| B-7/TMW-7                                        | 5/10/2013  | 269               | 3,330             | 2,340                  | 9,170             | <100                       | <100                     | 313                       | <100                       | 1,910                            | 622                              | <100                         | 617                   | 23.2              | <5                | <5                |
| B-8/TWM-8                                        | 5/10/2013  | 63.5              | <5                | 74.4                   | 40.4              | 45.6                       | 11.3                     | 89.9                      | 8.59                       | 43.9                             | 9.82                             | <5                           | 653                   | 38.8              | 54.2              | <50               |
| DP-A                                             | 11/27/2013 | <5                | <5                | <5                     | <5                | <5                         | <5                       | <5                        | <5                         | <5                               | <5                               | <5                           | <5                    | NS                | NS                | NS                |
| DP-B                                             | 11/27/2013 | <5                | <5                | <5                     | <5                | <5                         | <5                       | <5                        | <5                         | <5                               | <5                               | <5                           | <5                    | NS                | NS                | NS                |
| DP-C                                             | 11/27/2013 | <5                | <5                | <5                     | <5                | <5                         | <5                       | <5                        | <5                         | <5                               | <5                               | <5                           | <5                    | NS                | NS                | NS                |
| DP-D                                             | 11/27/2013 | <5                | <5                | <5                     | <5                | <5                         | <5                       | <5                        | <5                         | <5                               | <5                               | <5                           | <5                    | NS                | NS                | NS                |
| DP-E                                             | 11/27/2013 | <5                | <5                | <5                     | <5                | <5                         | <5                       | <5                        | <5                         | <5                               | <5                               | <5                           | <5                    | NS                | NS                | NS                |
| DP-F                                             | 11/27/2013 | <5                | <5                | <5                     | <5                | <5                         | <5                       | <5                        | <5                         | <5                               | <5                               | <5                           | <5                    | NS                | NS                | NS                |
| DP-G                                             | 11/27/2013 | <5                | <5                | <5                     | <5                | <5                         | <5                       | <5                        | <5                         | <5                               | <5                               | <5                           | <5                    | NS                | NS                | NS                |
| DP-H                                             | 11/27/2013 | <5                | <5                | <5                     | <10               | NS                         | NS                       | NS                        | NS                         | NS                               | NS                               | NS                           | NS                    | <5                | <5                | <5                |
| DP-I                                             | 11/27/2013 | <5                | <5                | <5                     | <10               | NS                         | NS                       | NS                        | NS                         | NS                               | NS                               | NS                           | NS                    | <5                | <5                | <5                |
| DP-J                                             | 11/27/2013 | <5                | <5                | <5                     | <10               | NS                         | NS                       | NS                        | NS                         | NS                               | NS                               | NS                           | NS                    | <5                | <5                | <5                |
| DP-K                                             | 11/27/2013 | <5                | <5                | <5                     | <10               | NS                         | NS                       | NS                        | NS                         | NS                               | NS                               | NS                           | NS                    | <5                | <5                | <5                |
| OCC<br>Screening<br>Level (OAC<br>165:25-2-136)  |            | 5                 | 1,000             | 700                    | 10,000            | None                       | None                     | None                      | None                       | None                             | None                             | None                         | None                  | 2                 |                   |                   |
| Federal<br>Drinking Water<br>Standards<br>(MCLs) |            | 5                 | 1,000             | 700                    | 10,000            | None                       | None                     | None                      | None                       | None                             | None                             | None                         | None                  | 1*                |                   |                   |

Apparent areas of Impact are shown in Red. For VOCs and TPH any detection is an apparent impact.  
Yellow outlined values are areas of apparent impact that exceed Federal Drinking Water Standards (MCLs)  
VOCs not included on table are below Laboratory Detection Levels  
\* No MCL has been published for TPH. ODEQ Tier 1 Generic Cleanup Levels are shown on this table.  
NS - No groundwater sample collected  
For this table - TPH-GRO (C6 to C12), TPH-DRO (>C12 to C28), TPH-ORO (>C28 to C35)



## Appendices

## Appendix A – Boring Logs


# LOG OF BORING NO. (DP-A)

PAGE 1 OF 2

OWNER: City of Oklahoma City Planning Department

SITE: Fred Jones Building Complex

PROJECT: 11050

|                                                                                    | DESCRIPTION                                                                                                                                           | GROUND SURFACE ELEV. |  | SAMPLES    |                |      |          | TESTS                                                                |  |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--|------------|----------------|------|----------|----------------------------------------------------------------------|--|
|                                                                                    |                                                                                                                                                       |                      |  | DEPTH (FT) | Time (seconds) | TYPE | RECOVERY | FIELD SCREENING RESULTS                                              |  |
|  | SILTY SAND (SM) – light brown, moist, fine to very fine, poorly graded, trace black staining, no odour<br><br>- 2" course gravel layer at 0.5' and 4' |                      |  |            |                |      |          | 1.3 at 0.5 ft<br>1.2 at 1.5 ft<br>0.6 at 2.5 ft<br>0.6 at 3.5 ft     |  |
|                                                                                    | GRAVEL (GP) - Grey to light grey, decreasing grain size with depth                                                                                    | 4.5'                 |  | 4'         |                |      |          | 0.4 at 4.5 ft<br>0.3 at 5.5 ft                                       |  |
|                                                                                    | SILTY CLAY (CL) – reddish-brown, moist, stiff, medium plasticity                                                                                      | 5'                   |  |            |                |      | 4'       | 1.7 at 6.5 ft<br>0.8 at 7.5 ft                                       |  |
|                                                                                    | SILTY SAND (SM) – red-tan, damp, fine to very fine grained, poorly graded                                                                             | 9'                   |  | 8'         |                |      |          | 2.8 at 8.5 ft<br>11.9 at 9.5 ft                                      |  |
|                                                                                    | SILTY SAND (SM) – light brown, damp, fine to very fine grained, poorly graded<br><br>- Saturated at 14ft                                              | 13'                  |  |            |                |      | 4'       | 27.3 at 10.5 ft<br>39.5 at 11.5 ft                                   |  |
|                                                                                    | CONTINUED ON NEXT PAGE                                                                                                                                |                      |  | 12'        |                |      |          | 3.3 at 12.5 ft<br>0.4 at 13.5 ft<br>0.3 at 14.5 ft<br>0.3 at 15.5 ft |  |
|                                                                                    |                                                                                                                                                       |                      |  | 16'        |                |      |          |                                                                      |  |

Sample collected at 11'- 11.5'

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 2" Push Probe  
WELL DIA: 1" 40-Schedule Pipe

| WATER LEVEL OBSERVATIONS |                       |  | BORING STARTED 11/19/13   |                        |
|--------------------------|-----------------------|-------------------------------------------------------------------------------------|---------------------------|------------------------|
| wl                       | Water at 14ft depth   |                                                                                     | BORING COMPLETED 11/19/13 |                        |
| wl                       | 14.38ft on 11/22/2013 |                                                                                     | INSPECTOR: JB             | DRILLER: Great Plains  |
| wl                       | 14.66ft on 11/27/2013 |                                                                                     | Geoprobe                  | FOREMAN: Louis Novotny |

# LOG OF BORING NO. (DP-A)

PAGE 2 OF 2

OWNER: City of Oklahoma City Planning Department

SITE: Fred Jones Building Complex

PROJECT: 11050

|  | DESCRIPTION                                                                |  |  | SAMPLES    |                |      |          | TESTS |                                                                      |
|--|----------------------------------------------------------------------------|--|--|------------|----------------|------|----------|-------|----------------------------------------------------------------------|
|  |                                                                            |  |  | DEPTH (FT) | Time (seconds) | TYPE | RECOVERY |       | FIELD SCREENING RESULTS                                              |
|  | GROUND SURFACE ELEV.                                                       |  |  |            |                |      |          |       |                                                                      |
|  | SILTY SAND (SM) – light brown, saturated, very fine grained, poorly graded |  |  |            |                |      | 4'       |       | 0.3 at 16.5 ft<br>0.5 at 17.5 ft<br>0.2 at 18.5 ft<br>0.2 at 19.5 ft |
|  | END OF BORING AT 20 FEET                                                   |  |  |            |                |      |          |       |                                                                      |

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 2" Push Probe  
WELL DIA: 1" 40-Schedule Pipe

## WATER LEVEL OBSERVATIONS

wl Water at 14ft depth  
wl 14.38ft on 11/22/2013  
wl 14.66ft on 11/27/2013



BORING STARTED 11/19/13

BORING COMPLETED 11/19/13

INSPECTOR: JB

DRILLER: Great Plains

Geoprobe

FOREMAN: Louis Novotny



# LOG OF BORING NO. (DP-B)

PAGE 1 OF 2

OWNER: City of Oklahoma City Planning Department

SITE: Fred Jones Building Complex

PROJECT: 11050

|  | DESCRIPTION                                                                           | GROUND SURFACE ELEV. |  | SAMPLES    |                |      |          | TESTS                   |                 |
|--|---------------------------------------------------------------------------------------|----------------------|--|------------|----------------|------|----------|-------------------------|-----------------|
|  |                                                                                       |                      |  | DEPTH (FT) | Time (seconds) | TYPE | RECOVERY | FIELD SCREENING RESULTS |                 |
|  | SILTY SAND (SM) – tan, moist, fine to very fine, poorly graded                        | 1'                   |  |            |                |      |          |                         | 0.1 at 0.5 ft   |
|  | SANDY SILT (ML) – brown, moist, slightly plastic, trace black staining                |                      |  |            |                |      | 4'       |                         | 0.1 at 1.5 ft   |
|  | - Layers of dark brown to black, well sorted gravel at 3.5', 4', slight organic odour | 4.5'                 |  | 4'         |                |      |          |                         | 0.1 at 2.5 ft   |
|  |                                                                                       |                      |  |            |                |      |          |                         | 0.1 at 3.5 ft   |
|  | SILTY CLAY (CL) – reddish-brown, moist, stiff to very stiff, medium plasticity        |                      |  | 8'         |                |      | 4'       |                         | 0.1 at 4.5 ft   |
|  |                                                                                       |                      |  |            |                |      |          |                         | 0.1 at 5.5 ft   |
|  |                                                                                       |                      |  |            |                |      |          |                         | 0.0 at 6.5 ft   |
|  |                                                                                       |                      |  |            |                |      |          |                         | 0.0 at 7.5 ft   |
|  |                                                                                       |                      |  | 12'        |                |      | 4'       |                         | 0.0 at 8.5 ft   |
|  |                                                                                       |                      |  |            |                |      |          |                         | 0.3 at 9.5 ft   |
|  | SILTY SAND (SM) – red-tan, damp, fine to very fine grained, poorly graded             | 10'                  |  |            |                |      |          |                         | 1.3 at 10.5 ft  |
|  | - 1" gravel layer at 13ft                                                             |                      |  |            |                |      |          |                         | 3.1 at 11.5 ft  |
|  | - Saturated at 14ft                                                                   |                      |  |            |                |      |          |                         | 11.3 at 12.5 ft |
|  |                                                                                       |                      |  |            |                |      | 4'       |                         | 0.8 at 13.5 ft  |
|  |                                                                                       |                      |  |            |                |      |          |                         | 0.1 at 14.5 ft  |
|  |                                                                                       |                      |  | 16'        |                |      |          |                         | 0.1 at 15.5 ft  |
|  | CONTINUED ON NEXT PAGE                                                                |                      |  |            |                |      |          |                         |                 |

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 2" Push Probe  
WELL DIA: 1" 40-Schedule Pipe

## WATER LEVEL OBSERVATIONS

|    |                       |
|----|-----------------------|
| wl | Water at 14ft depth   |
| wl | 14.77ft on 11/22/2013 |
| wl | 14.79ft on 11/27/2013 |



BORING STARTED 11/19/13

BORING COMPLETED 11/19/13

INSPECTOR: JB

DRILLER: Great Plains

Geoprobe

FOREMAN: Louis Novotny

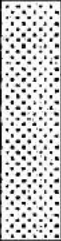

# LOG OF BORING NO. (DP-B)

PAGE 2 OF 2

OWNER: City of Oklahoma City Planning Department

SITE: Fred Jones Building Complex

PROJECT: 11050

|                                                                                   | DESCRIPTION                                                                    | GROUND SURFACE ELEV. |                                                                                   | SAMPLES    |                |      |          | TESTS |                                                                      |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------|------------|----------------|------|----------|-------|----------------------------------------------------------------------|
|                                                                                   |                                                                                |                      |                                                                                   | DEPTH (Ft) | Time (seconds) | TYPE | RECOVERY |       | FIELD SCREENING RESULTS                                              |
|  | SILTY SAND (SM) – red-tan, saturated, fine to very fine grained, poorly graded |                      |  |            |                |      | 4'       |       | 0.7 at 16.5 ft<br>0.1 at 17.5 ft<br>0.1 at 18.5 ft<br>0.1 at 19.5 ft |
|                                                                                   | END OF BORING AT 20 FEET                                                       |                      |                                                                                   |            |                |      |          |       |                                                                      |

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 2" Push Probe  
WELL DIA: 1" 40-Schedule Pipe

| WATER LEVEL OBSERVATIONS |                       |  | BORING STARTED 11/19/13   |                        |
|--------------------------|-----------------------|-------------------------------------------------------------------------------------|---------------------------|------------------------|
| wl                       | Water at 14ft depth   |                                                                                     | BORING COMPLETED 11/19/13 |                        |
| wl                       | 14.77ft on 11/22/2013 |                                                                                     | INSPECTOR: JB             | DRILLER: Great Plains  |
| wl                       | 14.79ft on 11/27/2013 |                                                                                     | Geoprobe                  | FOREMAN: Louis Novotny |



# LOG OF BORING NO. (DP-C)

PAGE 1 OF 2

OWNER: City of Oklahoma City Planning Department

SITE: Fred Jones Building Complex

PROJECT: 11050

|                                                                                    | DESCRIPTION                                                                                                                     | GROUND SURFACE ELEV. |                                                                                    | SAMPLES    |                                |      |          | TESTS |                         |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------|------------------------------------------------------------------------------------|------------|--------------------------------|------|----------|-------|-------------------------|
|                                                                                    |                                                                                                                                 |                      |                                                                                    | DEPTH (FT) | Time (seconds)                 | TYPE | RECOVERY |       | FIELD SCREENING RESULTS |
|  | SILTY CLAY (CL) – mottled red with black, moist, soft to medium, medium plasticity                                              | 1.5'                 |  |            |                                |      |          |       | 9.8 at 0.5 ft           |
|                                                                                    | SANDY SILT (ML) – dark brown, colour lightens with depth, moist, fine to very fine grained, poorly graded, soft, low plasticity |                      |                                                                                    |            |                                |      | 4'       |       | 6.7 at 1.5 ft           |
|                                                                                    |                                                                                                                                 |                      |                                                                                    |            |                                |      |          |       | 14.0 at 2.5 ft          |
|                                                                                    |                                                                                                                                 |                      |                                                                                    |            |                                |      |          |       | 6.8 at 3.5 ft           |
|                                                                                    | SILTY SAND (SM) – light reddish-brown, moist, fine to very fine grained, poorly graded<br>- damp lens from 5.5' to 7'           | 4'                   |                                                                                    | 4'         |                                |      | 4'       |       | 14.6 at 4.5 ft          |
|                                                                                    |                                                                                                                                 |                      |                                                                                    |            |                                |      |          |       | 0.4 at 5.5 ft           |
|                                                                                    |                                                                                                                                 |                      |                                                                                    |            |                                |      |          |       | 0.4 at 6.5 ft           |
|                                                                                    |                                                                                                                                 |                      |                                                                                    |            |                                |      |          |       | 0.8 at 7.5 ft           |
|                                                                                    | SILTY CLAY (CL) – red, moist, hard, medium plasticity, slight organic odour                                                     | 8.5'                 |                                                                                    | 8'         |                                |      |          |       | 12.7 at 8.5 ft          |
|                                                                                    |                                                                                                                                 |                      |                                                                                    |            |                                |      |          |       | 65.5 at 9.5 ft          |
|                                                                                    | SILTY SAND (SM) – red-tan, damp, fine to very fine grained, poorly graded                                                       | 10'                  |                                                                                    |            |                                |      | 4'       |       | 76.5 at 10.5 ft         |
|                                                                                    |                                                                                                                                 |                      |                                                                                    |            |                                |      |          |       | 6.2 at 11.5 ft          |
|                                                                                    |                                                                                                                                 |                      |                                                                                    | 12'        | Sample collected at 12'- 12.5' |      |          |       | 116.2 at 12.5 ft        |
|                                                                                    |                                                                                                                                 |                      |                                                                                    |            |                                |      |          |       | 58.5 at 13.5 ft         |
|                                                                                    | - Saturated at 14.5ft                                                                                                           |                      |                                                                                    |            |                                |      | 4'       |       | 1.2 at 14.5 ft          |
|                                                                                    |                                                                                                                                 |                      |                                                                                    |            |                                |      |          |       | 0.7 at 15.5 ft          |
|                                                                                    | CONTINUED ON NEXT PAGE                                                                                                          |                      |                                                                                    | 16'        |                                |      |          |       |                         |

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 2" Push Probe  
WELL DIA: 1" 40-Schedule Pipe

| WATER LEVEL OBSERVATIONS |                       |  | BORING STARTED 11/19/13   |                        |
|--------------------------|-----------------------|-------------------------------------------------------------------------------------|---------------------------|------------------------|
| wl                       | Water at 14.5ft depth |                                                                                     | BORING COMPLETED 11/19/13 |                        |
| wl                       | 16.13ft on 11/22/2013 |                                                                                     | INSPECTOR: JB             | DRILLER: Great Plains  |
| wl                       | 16.17ft on 11/27/2013 |                                                                                     | Geoprobe                  | FOREMAN: Louis Novotny |

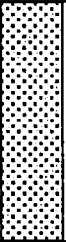

# LOG OF BORING NO. (DP-C)

PAGE 2 OF 2

OWNER: City of Oklahoma City Planning Department

SITE: Fred Jones Building Complex

PROJECT: 11050

|                                                                                   | DESCRIPTION                                                                    |                                                                                   |  | SAMPLES    |                |      |          | TESTS                                                                |  |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|------------|----------------|------|----------|----------------------------------------------------------------------|--|
|                                                                                   |                                                                                |                                                                                   |  | DEPTH (FT) | Time (seconds) | TYPE | RECOVERY | FIELD SCREENING RESULTS                                              |  |
|                                                                                   | GROUND SURFACE ELEV.                                                           |                                                                                   |  |            |                |      |          |                                                                      |  |
|  | SILTY SAND (SM) – red-tan, saturated, fine to very fine grained, poorly graded |  |  |            |                |      | 4'       | 8.2 at 16.5 ft<br>0.2 at 17.5 ft<br>0.1 at 18.5 ft<br>0.1 at 19.5 ft |  |
|                                                                                   | END OF BORING AT 20 FEET                                                       |                                                                                   |  |            |                |      |          |                                                                      |  |

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 2" Push Probe  
WELL DIA: 1" 40-Schedule Pipe

## WATER LEVEL OBSERVATIONS

|    |                       |
|----|-----------------------|
| wl | Water at 14.5ft depth |
| wl | 16.13ft on 11/22/2013 |
| wl | 16.17ft on 11/27/2013 |



BORING STARTED 11/19/13

BORING COMPLETED 11/19/13

INSPECTOR: JB

DRILLER: Great Plains

Geoprobe

FOREMAN: Louis Novotny






# LOG OF BORING NO. (DP-D)

PAGE 1 OF 2

OWNER: City of Oklahoma City Planning Department

SITE: Fred Jones Building Complex

PROJECT: 11050

|                                                                                    | DESCRIPTION                                                                                            | GROUND SURFACE ELEV. | DEPTH (FT) | SAMPLES        |      |          | TESTS                   |                  |
|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|----------------------|------------|----------------|------|----------|-------------------------|------------------|
|                                                                                    |                                                                                                        |                      |            | Time (seconds) | TYPE | RECOVERY | FIELD SCREENING RESULTS |                  |
|  | GRAVEL AND SILTY SAND (GM) – black with mottle brown, moist, well graded                               |                      |            |                |      |          |                         | 7.9 at 0.5 ft    |
|                                                                                    | SANDY SILT (ML) – dark brown, moist, fine to very fine grained, poorly graded, stiff, slightly plastic | 1'                   |            |                |      | 4'       |                         | 8.8 at 1.5 ft    |
|                                                                                    | SILTY SAND (SM) – red-tan, damp, very fine grained, poorly graded                                      | 3'                   |            |                |      |          |                         | 1.7 at 2.5 ft    |
|                                                                                    |                                                                                                        |                      | 4'         |                |      |          |                         | 0.6 at 3.5 ft    |
|                                                                                    | SILTY CLAY (CL) – red, moist, firm, medium plasticity, slight organic odour                            | 4'                   |            |                |      | 4'       |                         | 3.5 at 4.5 ft    |
|                                                                                    |                                                                                                        |                      | 8'         |                |      |          |                         | 3.5 at 5.5 ft    |
|                                                                                    |                                                                                                        |                      |            |                |      |          |                         | 9.0 at 6.5 ft    |
|                                                                                    |                                                                                                        |                      |            |                |      |          |                         | 0.9 at 7.5 ft    |
|                                                                                    | SILTY SAND (SM) – red-tan, damp, fine to very fine grained, poorly graded                              | 9'                   |            |                |      | 4'       |                         | 23.4 at 8.5 ft   |
|                                                                                    |                                                                                                        |                      | 12'        |                |      |          |                         | 5.8 at 9.5 ft    |
|  |                                                                                                        |                      |            |                |      |          |                         | 86.9 at 10.5 ft  |
|                                                                                    |                                                                                                        |                      |            |                |      |          |                         | 37.7 at 11.5 ft  |
|                                                                                    |                                                                                                        |                      |            |                |      |          |                         | 16.6 at 12.5 ft  |
|                                                                                    |                                                                                                        |                      |            |                |      |          |                         | 110.5 at 13.5 ft |
|                                                                                    |                                                                                                        |                      |            |                |      |          |                         | 0.6 at 14.5 ft   |
|  |                                                                                                        |                      |            |                |      |          |                         | 0.3 at 15.5 ft   |
|                                                                                    |                                                                                                        |                      | 16'        |                |      |          |                         |                  |
| CONTINUED ON NEXT PAGE                                                             |                                                                                                        |                      |            |                |      |          |                         |                  |

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 2" Push Probe  
WELL DIA: 1" 40-Schedule Pipe

|                          |                       |                                                                                     |                           |                        |
|--------------------------|-----------------------|-------------------------------------------------------------------------------------|---------------------------|------------------------|
| WATER LEVEL OBSERVATIONS |                       |  | BORING STARTED 11/19/13   |                        |
| wl                       | Water at 15ft depth   |                                                                                     | BORING COMPLETED 11/19/13 |                        |
| wl                       | 15.35ft on 11/22/2013 |                                                                                     | INSPECTOR: JB             | DRILLER: Great Plains  |
| wl                       | 15.43ft on 11.27/2013 |                                                                                     | Geoprobe                  | FOREMAN: Louis Novotny |
|                          |                       |                                                                                     |                           |                        |



# LOG OF BORING NO. (DP-D)

PAGE 2 OF 2

OWNER: City of Oklahoma City Planning Department

SITE: Fred Jones Building Complex

PROJECT: 11050

|                                                                                                                                | DESCRIPTION<br><br>GROUND SURFACE ELEV.                                        |                                                                                   | SAMPLES                                                       |                |                        |          | TESTS                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------|----------------|------------------------|----------|------------------------------------------------------------------------|
|                                                                                                                                |                                                                                |                                                                                   | DEPTH (FT)                                                    | Time (seconds) | TYPE                   | RECOVERY | FIELD SCREENING RESULTS                                                |
|                                               | SILTY SAND (SM) – red-tan, saturated, fine to very fine grained, poorly graded |  |                                                               |                |                        | 4'       | 5.1 at 16.5 ft<br>16.5 at 17.5 ft<br>2.5 at 18.5 ft<br>27.3 at 19.5 ft |
| END OF BORING AT 20 FEET                                                                                                       |                                                                                |                                                                                   |                                                               |                |                        |          |                                                                        |
| The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual. |                                                                                |                                                                                   | BOREHOLE DIA : 2" Push Probe<br>WELL DIA: 1" 40-Schedule Pipe |                |                        |          |                                                                        |
| WATER LEVEL OBSERVATIONS                                                                                                       |                                                                                |                                                                                   | BORING STARTED 11/19/13                                       |                |                        |          |                                                                        |
| wl                                                                                                                             | Water at 15ft depth                                                            |                                                                                   | BORING COMPLETED 11/19/13                                     |                |                        |          |                                                                        |
| wl                                                                                                                             | 15.35ft on 11/22/2013                                                          |                                                                                   | INSPECTOR: JB                                                 |                | DRILLER: Great Plains  |          |                                                                        |
| wl                                                                                                                             | 15.43ft on 11.27/2013                                                          |                                                                                   | Geoprobe                                                      |                | FOREMAN: Louis Novotny |          |                                                                        |





# LOG OF BORING NO. (DP-E)

PAGE 1 OF 2

OWNER: City of Oklahoma City Planning Department

SITE: Fred Jones Building Complex

PROJECT: 11050

|                                                                                    | DESCRIPTION                                                                                           | GROUND SURFACE ELEV. |  | SAMPLES    |                |      |          | TESTS                   |  |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------|--|------------|----------------|------|----------|-------------------------|--|
|                                                                                    |                                                                                                       |                      |  | DEPTH (FT) | Time (seconds) | TYPE | RECOVERY | FIELD SCREENING RESULTS |  |
|  | SANDY SILT (ML) – black to dark brown, moist, fine grained, poorly graded, stiff, non-plastic plastic |                      |  |            |                |      |          | 0.0 at 0.5 ft           |  |
|                                                                                    | SILTY SAND (SM) – brown, damp, very fine grained, poorly graded                                       | 2'                   |  |            |                |      | 4'       | 0.1 at 1.5 ft           |  |
|                                                                                    | SANDY SILT (ML) – black to dark brown, moist, fine grained, poorly graded, stiff, non-plastic         | 4'                   |  |            |                |      |          | 0.0 at 2.5 ft           |  |
|                                                                                    |                                                                                                       | 4.5'                 |  |            |                |      |          | 0.0 at 3.5 ft           |  |
|                                                                                    | SANDY SILT (ML) – dark brown, moist, fine grained, poorly graded, stiff, non-plastic                  |                      |  | 4'         |                |      | 4'       | 0.2 at 4.5 ft           |  |
|                                                                                    |                                                                                                       |                      |  |            |                |      |          | 0.4 at 5.5 ft           |  |
|                                                                                    |                                                                                                       |                      |  |            |                |      |          | 0.8 at 6.5 ft           |  |
|                                                                                    |                                                                                                       |                      |  | 8'         |                |      |          | 0.6 at 7.5 ft           |  |
|                                                                                    | SILTY CLAY (CL)- brown, moist, hard, hard, medium plasticity                                          | 10'                  |  |            |                |      | 4'       | 0.4 at 8.5 ft           |  |
|                                                                                    |                                                                                                       | 11'                  |  |            |                |      |          | 2.1 at 9.5 ft           |  |
|  | SILTY SAND (SM) –brown, damp, fine to very fine grained, poorly graded                                |                      |  | 12'        |                |      |          | 2.7 at 10.5 ft          |  |
|                                                                                    | - Saturated at 14ft                                                                                   |                      |  |            |                |      |          | 0.1 at 11.5 ft          |  |
|                                                                                    |                                                                                                       |                      |  |            |                |      | 4'       | 0.0 at 12.5 ft          |  |
|                                                                                    |                                                                                                       |                      |  |            |                |      |          | 0.0 at 13.5 ft          |  |
|                                                                                    |                                                                                                       |                      |  | 16'        |                |      |          | 0.0 at 14.5 ft          |  |
|                                                                                    |                                                                                                       |                      |  |            |                |      |          | 0.0 at 15.5 ft          |  |
| CONTINUED ON NEXT PAGE                                                             |                                                                                                       |                      |  |            |                |      |          |                         |  |

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 2" Push Probe  
WELL DIA: 1" 40-Schedule Pipe

| WATER LEVEL OBSERVATIONS |                       |  | BORING STARTED 11/19/13   |                        |
|--------------------------|-----------------------|-------------------------------------------------------------------------------------|---------------------------|------------------------|
| wl                       | Water at 14ft depth   |                                                                                     | BORING COMPLETED 11/19/13 |                        |
| wl                       | 15.24ft on 11/22/2013 |                                                                                     | INSPECTOR: JB             | DRILLER: Great Plains  |
| wl                       | 15.42ft on 11/27/2013 |                                                                                     | Geoprobe                  | FOREMAN: Louis Novotny |
|                          |                       |                                                                                     |                           |                        |





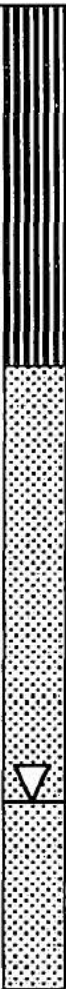
# LOG OF BORING NO. (DP-F)

PAGE 1 OF 2

OWNER: City of Oklahōma City Planning Department

SITE: Fred Jones Building Complex

PROJECT: 11050

|                                                                                    | DESCRIPTION                                                                                                                                       | GROUND SURFACE ELEV. |  | SAMPLES    |                |      |          | TESTS |                                                                      |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--|------------|----------------|------|----------|-------|----------------------------------------------------------------------|
|                                                                                    |                                                                                                                                                   |                      |  | DEPTH (FT) | Time (seconds) | TYPE | RECOVERY |       | FIELD SCREENING RESULTS                                              |
|  | SANDY SILT (ML) – dark brown and gradual lightening in colour with depth, moist, fine to very fine grained, poorly graded, soft, slightly plastic |                      |  | 4'         |                |      | 4'       |       | 0.0 at 0.5 ft<br>0.0 at 1.5 ft<br>0.0 at 2.5 ft<br>0.0 at 3.5 ft     |
|                                                                                    |                                                                                                                                                   |                      |  | 8'         |                |      | 4'       |       | 0.0 at 4.5 ft<br>0.0 at 5.5 ft<br>0.0 at 6.5 ft<br>0.0 at 7.5 ft     |
|                                                                                    |                                                                                                                                                   |                      |  | 12'        |                |      | 4'       |       | 0.0 at 8.5 ft<br>0.0 at 9.5 ft<br>0.0 at 10.5 ft<br>0.0 at 11.5 ft   |
|                                                                                    |                                                                                                                                                   |                      |  | 16'        |                |      | 4'       |       | 0.0 at 12.5 ft<br>0.0 at 13.5 ft<br>0.0 at 14.5 ft<br>0.0 at 15.5 ft |
|                                                                                    |                                                                                                                                                   |                      |  |            |                |      |          |       |                                                                      |
|                                                                                    |                                                                                                                                                   |                      |  |            |                |      |          |       |                                                                      |
|                                                                                    |                                                                                                                                                   |                      |  |            |                |      |          |       |                                                                      |
|                                                                                    |                                                                                                                                                   |                      |  |            |                |      |          |       |                                                                      |
|                                                                                    |                                                                                                                                                   |                      |  |            |                |      |          |       |                                                                      |
|                                                                                    |                                                                                                                                                   |                      |  |            |                |      |          |       |                                                                      |
|                                                                                    |                                                                                                                                                   |                      |  |            |                |      |          |       |                                                                      |
|                                                                                    |                                                                                                                                                   |                      |  |            |                |      |          |       |                                                                      |

CONTINUED ON NEXT PAGE

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA: 2" Push Probe  
WELL DIA: 1" 40-Schedule Pipe

## WATER LEVEL OBSERVATIONS

|    |                       |
|----|-----------------------|
| wl | Water at 13ft depth   |
| wl | 15.20ft on 11/22/2013 |
| wl | 15.31ft on 11/27/2013 |



BORING STARTED 11/19/13

BORING COMPLETED 11/19/13

INSPECTOR: JB

DRILLER: Great Plains

Geoprobe

FOREMAN: Louis Novotny

# LOG OF BORING NO. (DP-F)

PAGE 2 OF 2

OWNER: City of Oklahoma City Planning Department

SITE: Fred Jones Building Complex

PROJECT: 11050

|  | DESCRIPTION                                                                        |  |  | SAMPLES    |                |      |          | TESTS |                                                                      |
|--|------------------------------------------------------------------------------------|--|--|------------|----------------|------|----------|-------|----------------------------------------------------------------------|
|  |                                                                                    |  |  | DEPTH (FT) | Time (seconds) | TYPE | RECOVERY |       | FIELD SCREENING RESULTS                                              |
|  | GROUND SURFACE ELEV.                                                               |  |  |            |                |      |          |       |                                                                      |
|  | SILTY SAND (SM) – light brown, saturated, fine to very fine grained, poorly graded |  |  |            |                |      | 4'       |       | 0.0 at 16.5 ft<br>0.1 at 17.5 ft<br>0.0 at 18.5 ft<br>0.0 at 19.5 ft |
|  | END OF BORING AT 20 FEET                                                           |  |  |            |                |      |          |       |                                                                      |

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 2" Push Probe  
WELL DIA: 1" 40-Schedule Pipe

| WATER LEVEL OBSERVATIONS |                       |  | BORING STARTED 11/19/13   |                        |
|--------------------------|-----------------------|-------------------------------------------------------------------------------------|---------------------------|------------------------|
| wl                       | Water at 13ft depth   |                                                                                     | BORING COMPLETED 11/19/13 |                        |
| wl                       | 15.20ft on 11/22/2013 |                                                                                     | INSPECTOR: JB             | DRILLER: Great Plains  |
| wl                       | 15.31ft on 11/27/2013 |                                                                                     | Geoprobe                  | FOREMAN: Louis Novotny |


# LOG OF BORING NO. (DP-G)

PAGE 1 OF 2

OWNER: City of Oklahoma City Planning Department

SITE: Fred Jones Building Complex

PROJECT: 11050

|                                                                                    | DESCRIPTION                                                                                                                                                                               | GROUND SURFACE ELEV. |  | SAMPLES    |                |      |          | TESTS |                         |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--|------------|----------------|------|----------|-------|-------------------------|
|                                                                                    |                                                                                                                                                                                           |                      |  | DEPTH (FT) | Time (seconds) | TYPE | RECOVERY |       | FIELD SCREENING RESULTS |
|  | SANDY SILT (ML) – dark brown at surface then lightening with increasing depth, moist, fine to very fine grained, poorly graded, soft, slightly plastic, sand content increases with depth |                      |  |            |                |      |          |       | 0.0 at 0.5 ft           |
|                                                                                    |                                                                                                                                                                                           |                      |  |            |                |      |          |       | 0.0 at 1.5 ft           |
|                                                                                    |                                                                                                                                                                                           |                      |  |            |                |      | 4'       |       | 0.0 at 2.5 ft           |
|                                                                                    |                                                                                                                                                                                           |                      |  |            |                |      |          |       | 0.0 at 3.5 ft           |
|                                                                                    |                                                                                                                                                                                           | 4'                   |  | 4'         |                |      |          |       | 0.0 at 4.5 ft           |
|                                                                                    | SILTY SAND (SM) – red-brown, moist, very fine grained, poorly graded                                                                                                                      |                      |  |            |                |      |          |       | 0.0 at 5.5 ft           |
|                                                                                    | - Brown silty sand at 5 feet                                                                                                                                                              |                      |  |            |                |      | 4'       |       | 0.0 at 6.5 ft           |
|                                                                                    |                                                                                                                                                                                           |                      |  |            |                |      |          |       | 0.0 at 7.5 ft           |
|                                                                                    |                                                                                                                                                                                           |                      |  |            |                |      |          |       |                         |
|                                                                                    | SANDY SILT (ML) – reddish brown, moist, very fine grained, poorly graded                                                                                                                  | 8'                   |  | 8'         |                |      |          |       | 0.1 at 8.5 ft           |
|                                                                                    |                                                                                                                                                                                           |                      |  |            |                |      |          |       | 0.3 at 9.5 ft           |
|                                                                                    |                                                                                                                                                                                           | 10'                  |  |            |                |      | 4'       |       | 0.2 at 10.5 ft          |
|                                                                                    | SILTY SAND (SM) – red-brown, moist, very fine grained, poorly graded                                                                                                                      |                      |  |            |                |      |          |       | 0.0 at 11.5 ft          |
|                                                                                    |                                                                                                                                                                                           |                      |  | 12'        |                |      |          |       | 0.4 at 12.5 ft          |
|                                                                                    |                                                                                                                                                                                           |                      |  |            |                |      |          |       | 0.1 at 13.5 ft          |
|                                                                                    |                                                                                                                                                                                           |                      |  |            |                |      | 4'       |       | 0.0 at 14.5 ft          |
|                                                                                    |                                                                                                                                                                                           |                      |  |            |                |      |          |       | 0.0 at 15.5 ft          |
|                                                                                    |                                                                                                                                                                                           | 12.5'                |  | 16'        |                |      |          |       |                         |

CONTINUED ON NEXT PAGE

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 2" Push Probe  
WELL DIA: 1" 40-Schedule Pipe

## WATER LEVEL OBSERVATIONS

|    |                               |
|----|-------------------------------|
| wl | None observed during drilling |
| wl | 15.03ft on 11/22/2013         |
| wl | 15.18ft on 11/27/2013         |



BORING STARTED 11/19/13

BORING COMPLETED 11/19/13

INSPECTOR: JB

DRILLER: Great Plains

Geoprobe

FOREMAN: Louis Novotny



# LOG OF BORING NO. (DP-G)

PAGE 2 OF 2

OWNER: City of Oklahoma City Planning Department

SITE: Fred Jones Building Complex

PROJECT: 11050

|                                                                                                                                | DESCRIPTION                                                                                                                                                                                                                                                                                        | GROUND SURFACE ELEV. |                                                                                    | SAMPLES                                                       |                |      |                        | TESTS                   |                |
|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------|----------------|------|------------------------|-------------------------|----------------|
|                                                                                                                                |                                                                                                                                                                                                                                                                                                    |                      |                                                                                    | DEPTH (FT)                                                    | Time (seconds) | TYPE | RECOVERY               | FIELD SCREENING RESULTS |                |
|                                              | SILTY CLAY (CL) – brown, very moist, firm to very firm, medium plasticity<br>- Damp at 17 ft<br><br>- 1" sand lens at 23.5 ft<br><br>SILTY SAND (SM) – light brown, saturated, very fine grained, poorly graded<br><br>SANDY SILT (ML) –brown, moist, saturated, poorly graded, soft, very plastic | 24'<br>25'           |  | 20'<br><br><br><br><br><br><br><br><br><br>24'                |                |      | 4'                     |                         | 0.0 at 16.5 ft |
|                                                                                                                                |                                                                                                                                                                                                                                                                                                    |                      |                                                                                    |                                                               |                |      |                        |                         | 0.1 at 17.5 ft |
|                                                                                                                                |                                                                                                                                                                                                                                                                                                    |                      |                                                                                    |                                                               |                |      |                        |                         | 0.2 at 18.5 ft |
|                                                                                                                                |                                                                                                                                                                                                                                                                                                    |                      |                                                                                    |                                                               |                |      |                        |                         | 0.0 at 19.5 ft |
|                                                                                                                                |                                                                                                                                                                                                                                                                                                    |                      |                                                                                    |                                                               |                |      |                        |                         | 1.3 at 20.5 ft |
|                                                                                                                                |                                                                                                                                                                                                                                                                                                    |                      |                                                                                    |                                                               |                |      |                        |                         | 0.1 at 21.5 ft |
|                                                                                                                                |                                                                                                                                                                                                                                                                                                    |                      |                                                                                    |                                                               |                |      |                        |                         | 0.0 at 22.5 ft |
|                                                                                                                                |                                                                                                                                                                                                                                                                                                    |                      |                                                                                    |                                                               |                |      |                        |                         | 0.1 at 23.5 ft |
|                                                                                                                                |                                                                                                                                                                                                                                                                                                    |                      |                                                                                    |                                                               |                |      |                        |                         | 0.2 at 24.5 ft |
|                                                                                                                                |                                                                                                                                                                                                                                                                                                    |                      |                                                                                    |                                                               |                |      |                        |                         | 0.1 at 25.5 ft |
| 0.1 at 26.5 ft                                                                                                                 |                                                                                                                                                                                                                                                                                                    |                      |                                                                                    |                                                               |                |      |                        |                         |                |
| 0.1 at 27.5 ft                                                                                                                 |                                                                                                                                                                                                                                                                                                    |                      |                                                                                    |                                                               |                |      |                        |                         |                |
| END OF BORING AT 28 FEET                                                                                                       |                                                                                                                                                                                                                                                                                                    |                      |                                                                                    |                                                               |                |      |                        |                         |                |
| The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual. |                                                                                                                                                                                                                                                                                                    |                      |                                                                                    | BOREHOLE DIA : 2" Push Probe<br>WELL DIA: 1" 40-Schedule Pipe |                |      |                        |                         |                |
| WATER LEVEL OBSERVATIONS                                                                                                       |                                                                                                                                                                                                                                                                                                    |                      |                                                                                    | BORING STARTED 11/19/13                                       |                |      |                        |                         |                |
| wl                                                                                                                             | None observed during drilling                                                                                                                                                                                                                                                                      |                      |                                                                                    | BORING COMPLETED 11/19/13                                     |                |      |                        |                         |                |
| wl                                                                                                                             | 15.03ft on 11/22/2013                                                                                                                                                                                                                                                                              |                      |                                                                                    | INSPECTOR: JB                                                 |                |      | DRILLER: Great Plains  |                         |                |
| wl                                                                                                                             | 15.18ft on 11/27/2013                                                                                                                                                                                                                                                                              |                      |                                                                                    | Geoprobe                                                      |                |      | FOREMAN: Louis Novotny |                         |                |





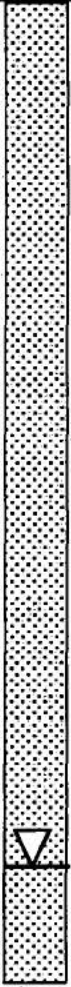
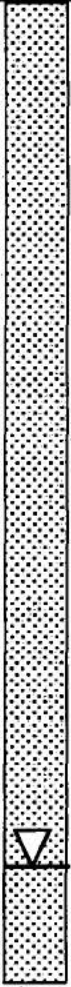
# LOG OF BORING NO. (DP-H)

PAGE 1 OF 2

OWNER: City of Oklahoma City Planning Department

SITE: Fred Jones Building Complex

PROJECT: 11050

|                                                                                    | DESCRIPTION                                                             | GROUND SURFACE ELEV. |  | SAMPLES    |                |      |          | TESTS                   |  |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------|----------------------|--|------------|----------------|------|----------|-------------------------|--|
|                                                                                    |                                                                         |                      |  | DEPTH (FT) | Time (seconds) | TYPE | RECOVERY | FIELD SCREENING RESULTS |  |
|  | SAND (SW) – red and brown, moist, medium to coarse grained, well graded |                      |  |            |                |      |          | 0.3 at 0.5 ft           |  |
|                                                                                    | - Some coarse gravel at 0.5'                                            | 0.5'                 |  |            |                |      |          | 0.3 at 1.5 ft           |  |
|                                                                                    | SILTY SAND (SM) – brown, moist, fine grained, well graded               |                      |  |            |                |      | 4'       | 0.2 at 2.5 ft           |  |
|                                                                                    |                                                                         |                      |  |            |                |      |          | 0.2 at 3.5 ft           |  |
|                                                                                    |                                                                         |                      |  | 4'         |                |      |          | 0.2 at 4.5 ft           |  |
|                                                                                    |                                                                         |                      |  |            |                |      | 2'       | 0.1 at 5.5 ft           |  |
|                                                                                    | SILTY SAND (SM) – tan, moist, fine grained, poorly graded               | 6'                   |  |            |                |      |          | NR at 6.5 ft            |  |
|                                                                                    |                                                                         |                      |  |            |                |      |          | NR at 7.5 ft            |  |
|                                                                                    | - 1" layer of red, coarse to medium grained sand at 8.5ft               |                      |  | 8'         |                |      |          | 0.5 at 8.5 ft           |  |
|                                                                                    | - Silty sand is tan to light brown in colour and poorly graded          |                      |  |            |                |      | 4'       | 0.1 at 9.5 ft           |  |
|  |                                                                         |                      |  |            |                |      |          | 0.1 at 10.5 ft          |  |
|                                                                                    |                                                                         |                      |  |            |                |      |          | 0.1 at 11.5 ft          |  |
|                                                                                    |                                                                         |                      |  | 12'        |                |      |          | 0.1 at 12.5 ft          |  |
|                                                                                    | - 4" layer of medium to coarse grained sand at 13.5ft                   |                      |  |            |                |      | 4'       | 0.2 at 13.5 ft          |  |
|                                                                                    | - Saturated at 14.5ft                                                   |                      |  |            |                |      |          | 0.1 at 14.5 ft          |  |
|                                                                                    |                                                                         |                      |  | 16'        |                |      |          | 0.1 at 15.5 ft          |  |
| CONTINUED ON NEXT PAGE                                                             |                                                                         |                      |  |            |                |      |          |                         |  |

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 2" Push Probe  
WELL DIA: 1" 40-Schedule Pipe

|                          |                       |                                                                                     |                           |                        |
|--------------------------|-----------------------|-------------------------------------------------------------------------------------|---------------------------|------------------------|
| WATER LEVEL OBSERVATIONS |                       |  | BORING STARTED 11/19/13   |                        |
| wl                       | Water at 14.5ft depth |                                                                                     | BORING COMPLETED 11/19/13 |                        |
| wl                       | 14.03ft on 11/22/2013 |                                                                                     | INSPECTOR: JB             | DRILLER: Great Plains  |
| wl                       | 13.84ft on 11/27/2013 |                                                                                     | Geoprobe                  | FOREMAN: Louis Novotny |
|                          |                       |                                                                                     |                           |                        |



# LOG OF BORING NO. (DP-H)

PAGE 2 OF 2

OWNER: City of Oklahoma City Planning Department

SITE: Fred Jones Building Complex

PROJECT: 11050

|                                                                                   | DESCRIPTION                                                                                                      | GROUND SURFACE ELEV. |                                                                                   | SAMPLES    |                |      |          | TESTS |                                                                      |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------|------------|----------------|------|----------|-------|----------------------------------------------------------------------|
|                                                                                   |                                                                                                                  |                      |                                                                                   | DEPTH (FT) | Time (seconds) | TYPE | RECOVERY |       | FIELD SCREENING RESULTS                                              |
|  | SILTY SAND (SM) – tan coloured then changing to reddish brown with depth, saturated, fine grained, poorly graded |                      |  |            |                |      | 4'       |       | 0.1 at 16.5 ft<br>0.1 at 17.5 ft<br>0.1 at 18.5 ft<br>0.1 at 19.5 ft |
|                                                                                   | END OF BORING AT 20 FEET                                                                                         |                      |                                                                                   |            |                |      |          |       |                                                                      |

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 2" Push Probe  
WELL DIA: 1" 40-Schedule Pipe

| WATER LEVEL OBSERVATIONS |                       |  | BORING STARTED 11/20/13   |                        |
|--------------------------|-----------------------|-------------------------------------------------------------------------------------|---------------------------|------------------------|
| wl                       | Water at 14.5ft depth |                                                                                     | BORING COMPLETED 11/20/13 |                        |
| wl                       | 14.03ft on 11/22/2013 |                                                                                     | INSPECTOR: JB             | DRILLER: Great Plains  |
| wl                       | 13.84ft on 11/27/2013 |                                                                                     | Geoprobe                  | FOREMAN: Louis Novotny |

# LOG OF BORING NO. (DP-I)

PAGE 1 OF 2

OWNER: City of Oklahoma City Planning Department

SITE: Fred Jones Building Complex

PROJECT: 11050

|  | DESCRIPTION                                                                   | GROUND SURFACE ELEV. | SAMPLES    |                |      |          | TESTS                   |
|--|-------------------------------------------------------------------------------|----------------------|------------|----------------|------|----------|-------------------------|
|  |                                                                               |                      | DEPTH (FT) | Time (seconds) | TYPE | RECOVERY | FIELD SCREENING RESULTS |
|  | SAND (SP) – light brown to tan, moist, medium to fine grained, poorly graded  |                      |            |                |      |          | 0.2 at 0.5 ft           |
|  |                                                                               |                      |            |                |      |          | 0.1 at 1.5 ft           |
|  | SILTY SAND (SM) – brown to red, moist, fine to very fine grained, well graded |                      |            |                |      | 4'       | 0.1 at 2.5 ft           |
|  |                                                                               |                      |            |                |      |          | 0.1 at 3.5 ft           |
|  |                                                                               |                      | 4'         |                |      |          |                         |
|  |                                                                               |                      |            |                |      | 4'       | 0.1 at 4.5 ft           |
|  |                                                                               |                      |            |                |      |          | 0.1 at 5.5 ft           |
|  |                                                                               |                      |            |                |      |          | 0.1 at 6.5 ft           |
|  |                                                                               |                      | 8'         |                |      |          | 0.1 at 7.5 ft           |
|  |                                                                               |                      |            |                |      | 4'       | 0.2 at 8.5 ft           |
|  |                                                                               |                      |            |                |      |          | 0.2 at 9.5 ft           |
|  |                                                                               |                      |            |                |      |          | 0.2 at 10.5 ft          |
|  |                                                                               |                      | 12'        |                |      |          | 0.2 at 11.5 ft          |
|  | - Damp at 11 ft                                                               |                      |            |                |      |          |                         |
|  | - Saturated at 12.5ft                                                         |                      |            |                |      |          |                         |
|  | - 4" of tan, medium grained, well graded sand at 13.5ft                       |                      |            |                |      | 4'       | 0.1 at 12.5 ft          |
|  |                                                                               |                      |            |                |      |          | 0.1 at 13.5 ft          |
|  |                                                                               |                      |            |                |      |          | 0.1 at 14.5 ft          |
|  | - Red coloured sand at 15ft                                                   |                      |            |                |      |          | 0.1 at 15.5 ft          |
|  |                                                                               |                      | 16'        |                |      |          |                         |

CONTINUED ON NEXT PAGE

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 2" Push Probe  
WELL DIA: 1" 40-Schedule Pipe

|                          |                       |                                                                                     |                           |                        |
|--------------------------|-----------------------|-------------------------------------------------------------------------------------|---------------------------|------------------------|
| WATER LEVEL OBSERVATIONS |                       |  | BORING STARTED 11/19/13   |                        |
| wl                       | Water at 12.5ft depth |                                                                                     | BORING COMPLETED 11/19/13 |                        |
| wl                       | 13.52ft on 11/22/2013 |                                                                                     | INSPECTOR: JB             | DRILLER: Great Plains  |
| wl                       | 13.62ft on 11/27/2013 |                                                                                     | Geoprobe                  | FOREMAN: Louis Novotny |
|                          |                       |                                                                                     |                           |                        |

# LOG OF BORING NO. (DP-I)

PAGE 2 OF 2

OWNER: City of Oklahoma City Planning Department

SITE: Fred Jones Building Complex

PROJECT: 11050

|  | DESCRIPTION                                                                                  | GROUND SURFACE ELEV. |  |  | SAMPLES    |                |      |          | TESTS |                         |
|--|----------------------------------------------------------------------------------------------|----------------------|--|--|------------|----------------|------|----------|-------|-------------------------|
|  |                                                                                              |                      |  |  | DEPTH (FT) | Time (seconds) | TYPE | RECOVERY |       | FIELD SCREENING RESULTS |
|  | SILTY SAND (SM) – red-tan, saturated, very fine grained, poorly graded, slight organic odour |                      |  |  |            |                |      |          |       | 0.1 at 16.5 ft          |
|  | SANDY SILT (MH) – grey- brown, saturated, very fine grained, poorly graded, organic odour    | 18'                  |  |  |            |                |      | 4'       |       | 0.1 at 17.5 ft          |
|  |                                                                                              |                      |  |  |            |                |      |          |       | 0.1 at 18.5 ft          |
|  | END OF BORING AT 19 FEET                                                                     |                      |  |  |            |                |      |          |       |                         |

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 2" Push Probe  
WELL DIA: 1" 40-Schedule Pipe

|                          |                       |                                                                                     |                           |                        |
|--------------------------|-----------------------|-------------------------------------------------------------------------------------|---------------------------|------------------------|
| WATER LEVEL OBSERVATIONS |                       |  | BORING STARTED 11/20/13   |                        |
| wl                       | Water at 12.5ft depth |                                                                                     | BORING COMPLETED 11/20/13 |                        |
| wl                       | 13.52ft on 11/22/2013 |                                                                                     | INSPECTOR: JB             | DRILLER: Great Plains  |
| wl                       | 13.62ft on 11/27/2013 |                                                                                     | Geoprobe                  | FOREMAN: Louis Novotny |
|                          |                       |                                                                                     |                           |                        |




# LOG OF BORING NO. (DP-J)

PAGE 1 OF 2

OWNER: City of Oklahoma City Planning Department

SITE: Fred Jones Building Complex

PROJECT: 11050

|                                                                                    | DESCRIPTION                                                                                                                                         | GROUND SURFACE ELEV. |  | SAMPLES    |                |      |          | TESTS                                                                |  |
|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--|------------|----------------|------|----------|----------------------------------------------------------------------|--|
|                                                                                    |                                                                                                                                                     |                      |  | DEPTH (FT) | Time (seconds) | TYPE | RECOVERY | FIELD SCREENING RESULTS                                              |  |
|  | SAND (SW) – tan to brown, moist, medium to fine grained, well graded<br>- 1" SILTY CLAY layers at 1ft and 1.5ft – reddish brown, hard, very plastic |                      |  |            |                |      | 4'       | 0.1 at 0.5 ft<br>0.2 at 1.5 ft<br>0.1 at 2.5 ft<br>0.1 at 3.5 ft     |  |
|                                                                                    | SILTY CLAY (CH) – reddish-brown to dark brown, moist, very stiff to hard, very plastic                                                              | 3'                   |  | 4'         |                |      |          | 0.1 at 4.5 ft<br>0.1 at 5.5 ft<br>0.2 at 6.5 ft<br>0.2 at 7.5 ft     |  |
|                                                                                    | SAND (SW) – brown to tan, moist, medium to fine grained, well graded                                                                                | 4'                   |  |            |                |      | 4'       | 0.3 at 8.5 ft<br>1.6 at 9.5 ft<br>1.8 at 10.5 ft<br>0.2 at 11.5 ft   |  |
|                                                                                    | SILTY CLAY (CH) – brown to dark brown, moist, very stiff, very plastic                                                                              | 5'                   |  |            |                |      |          | 0.3 at 12.5 ft<br>0.2 at 13.5 ft<br>0.2 at 14.5 ft<br>0.1 at 15.5 ft |  |
|                                                                                    | - 1' layer of sand, medium to coarse grained and well graded at 11ft                                                                                | 11'                  |  | 8'         |                |      | 4'       |                                                                      |  |
|                                                                                    | SANDY SILT (MH) – brown to red, damp, poorly graded, soft, slightly plastic<br>- Saturated at 13ft                                                  | 13'                  |  | 12'        |                |      |          |                                                                      |  |
|                                                                                    | SILTY SAND (SM) – reddish brown, saturated, fine grained, poorly graded                                                                             | 13'                  |  | 16'        |                |      |          |                                                                      |  |
|                                                                                    | CONTINUED ON NEXT PAGE                                                                                                                              |                      |  |            |                |      |          |                                                                      |  |
|                                                                                    |                                                                                                                                                     |                      |  |            |                |      |          |                                                                      |  |
|                                                                                    |                                                                                                                                                     |                      |  |            |                |      |          |                                                                      |  |

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 2" Push Probe  
WELL DIA: 1" 40-Schedule Pipe

## WATER LEVEL OBSERVATIONS

|    |                       |
|----|-----------------------|
| wl | Water at 13ft depth   |
| wl | 13.02ft on 11/22/2013 |
| wl | 13.16ft on 11/27/2013 |



BORING STARTED 11/20/13

BORING COMPLETED 11/20/13

INSPECTOR: JB

DRILLER: Great Plains

Geoprobe

FOREMAN: Louis Novotny

# LOG OF BORING NO. (DP-J)

PAGE 2 OF 2

OWNER: City of Oklahoma City Planning Department

SITE: Fred Jones Building Complex

PROJECT: 11050

|  | DESCRIPTION                                                             |  |  | SAMPLES    |                |      |          | TESTS                   |  |
|--|-------------------------------------------------------------------------|--|--|------------|----------------|------|----------|-------------------------|--|
|  |                                                                         |  |  | DEPTH (FT) | Time (seconds) | TYPE | RECOVERY | FIELD SCREENING RESULTS |  |
|  | GROUND SURFACE ELEV.                                                    |  |  |            |                |      |          |                         |  |
|  | SILTY SAND (SM) – reddish brown, saturated, fine grained, poorly graded |  |  |            |                |      | 4'       | 0.1 at 16.5 ft          |  |
|  |                                                                         |  |  |            |                |      |          | 0.2 at 17.5 ft          |  |
|  |                                                                         |  |  |            |                |      |          | 0.2 at 18.5 ft          |  |
|  |                                                                         |  |  |            |                |      |          | 0.2 at 19.5 ft          |  |
|  | END OF BORING AT 19.5 FEET                                              |  |  |            |                |      |          |                         |  |

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 2" Push Probe  
WELL DIA: 1" 40-Schedule Pipe

| WATER LEVEL OBSERVATIONS |                       |  | BORING STARTED 11/20/13   |                        |
|--------------------------|-----------------------|-------------------------------------------------------------------------------------|---------------------------|------------------------|
| wl                       | Water at 13ft depth   |                                                                                     | BORING COMPLETED 11/20/13 |                        |
| wl                       | 13.02ft on 11/22/2013 |                                                                                     | INSPECTOR: JB             | DRILLER: Great Plains  |
| wl                       | 13.16ft on 11/27/2013 |                                                                                     | Geoprobe                  | FOREMAN: Louis Novotny |


# LOG OF BORING NO. (DP-K)

PAGE 1 OF 2

OWNER: City of Oklahoma City Planning Department

SITE: Fred Jones Building Complex

PROJECT: 11050

|                                                                                    | DESCRIPTION                                                                  | GROUND SURFACE ELEV. |  | SAMPLES    |                |      |          | TESTS                   |  |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------|----------------------|--|------------|----------------|------|----------|-------------------------|--|
|                                                                                    |                                                                              |                      |  | DEPTH (FT) | Time (seconds) | TYPE | RECOVERY | FIELD SCREENING RESULTS |  |
|  | SAND (SW) –brown, damp, medium grained, well graded                          |                      |  |            |                |      |          | 0.1 at 0.5 ft           |  |
|                                                                                    |                                                                              |                      |  |            |                |      |          | 0.1 at 1.5 ft           |  |
|                                                                                    |                                                                              |                      |  |            |                |      | 4'       | 0.2 at 2.5 ft           |  |
|                                                                                    |                                                                              |                      |  |            |                |      |          | 0.2 at 3.5 ft           |  |
|                                                                                    | SILTY CLAY (CL) –dark brown, moist, very stiff, slightly plastic             | 3'                   |  | 4'         |                |      |          | 0.2 at 4.5 ft           |  |
|                                                                                    | SAND (SW) –brown, moist, medium to fine grained, well graded                 | 4'                   |  |            |                |      |          | 0.2 at 5.5 ft           |  |
|                                                                                    |                                                                              | 5'                   |  |            |                |      | 4'       | 0.1 at 6.5 ft           |  |
|                                                                                    | SANDY SILT (CL) –dark brown, moist, poorly graded, very stiff, non-plastic   |                      |  | 8'         |                |      |          | 0.1 at 7.5 ft           |  |
|                                                                                    |                                                                              |                      |  |            |                |      | 4'       | 0.1 at 8.5 ft           |  |
|                                                                                    |                                                                              |                      |  |            |                |      |          | 0.2 at 9.5 ft           |  |
|                                                                                    |                                                                              |                      |  |            |                |      |          | 0.2 at 10.5 ft          |  |
|                                                                                    |                                                                              |                      |  |            |                |      |          | 0.1 at 11.5 ft          |  |
|                                                                                    | SILTY SAND (SM) – brown, damp, fine to very fine grained, poorly graded      | 11'                  |  | 12'        |                |      |          | 0.1 at 12.5 ft          |  |
|                                                                                    | SILTY SAND (SM) – reddish brown, saturated, very fine grained, poorly graded | 12'                  |  |            |                |      | 4'       | 0.1 at 13.5 ft          |  |
|                                                                                    |                                                                              |                      |  |            |                |      |          | 0.1 at 14.5 ft          |  |
|                                                                                    |                                                                              |                      |  | 16'        |                |      |          | 0.1 at 15.5 ft          |  |
| CONTINUED ON NEXT PAGE                                                             |                                                                              |                      |  |            |                |      |          |                         |  |

The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual.

BOREHOLE DIA : 2" Push Probe  
WELL DIA: 1" 40-Schedule Pipe

| WATER LEVEL OBSERVATIONS |                        |  | BORING STARTED 11/20/13   |                        |
|--------------------------|------------------------|-------------------------------------------------------------------------------------|---------------------------|------------------------|
| wl                       | Water at 12ft depth    |                                                                                     | BORING COMPLETED 11/20/13 |                        |
| wl                       | 13.31ft on /11/22/2013 |                                                                                     | INSPECTOR: JB             | DRILLER: Great Plains  |
| wl                       | 13.53ft on 11/27/2013  |                                                                                     | Geoprobe                  | FOREMAN: Louis Novotny |
|                          |                        |                                                                                     |                           |                        |

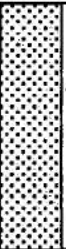


# LOG OF BORING NO. (DP-K)

PAGE 2 OF 2

OWNER: City of Oklahoma City Planning Department

SITE: Fred Jones Building Complex

PROJECT: 11050

| DESCRIPTION                                                                                                                    |                                                                              | GROUND SURFACE ELEV. |                                                                                   | SAMPLES                                                                             |                |                        |          | TESTS                   |                                                    |
|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------|------------------------|----------|-------------------------|----------------------------------------------------|
|                                                                                                                                |                                                                              |                      |                                                                                   | DEPTH (FT)                                                                          | Time (seconds) | TYPE                   | RECOVERY | FIELD SCREENING RESULTS |                                                    |
|                                               | SILTY SAND (SM) – reddish brown, saturated, very fine grained, poorly graded |                      |  |                                                                                     |                |                        |          |                         | 0.1 at 16.5 ft                                     |
|                                                                                                                                | SAND (SW) – brown, saturated, medium grained, well graded                    | 19'                  |                                                                                   |                                                                                     |                |                        | 4'       |                         | 0.1 at 17.5 ft<br>0.1 at 18.5 ft<br>0.1 at 19.5 ft |
| END OF BORING AT 20 FEET                                                                                                       |                                                                              |                      |                                                                                   |                                                                                     |                |                        |          |                         |                                                    |
| The Stratification Lines Represent the Approximate Boundary Lines Between Soil and Rock Types. The Transitions May be Gradual. |                                                                              |                      |                                                                                   | BOREHOLE DIA : 2" Push Probe<br>WELL DIA: 1" 40-Schedule Pipe                       |                |                        |          |                         |                                                    |
| WATER LEVEL OBSERVATIONS                                                                                                       |                                                                              |                      |                                                                                   |  |                |                        |          |                         |                                                    |
| wl                                                                                                                             | Water at 12ft depth                                                          |                      |                                                                                   |                                                                                     |                |                        |          |                         |                                                    |
| wl                                                                                                                             | 13.31ft on /11/22/2013                                                       |                      |                                                                                   |                                                                                     |                |                        |          |                         |                                                    |
| wl                                                                                                                             | 13.53ft on 11/27/2013                                                        |                      |                                                                                   |                                                                                     |                |                        |          |                         |                                                    |
|                                                                                                                                |                                                                              |                      |                                                                                   | BORING STARTED 11/20/13                                                             |                |                        |          |                         |                                                    |
|                                                                                                                                |                                                                              |                      |                                                                                   | BORING COMPLETED 11/20/13                                                           |                |                        |          |                         |                                                    |
|                                                                                                                                |                                                                              |                      |                                                                                   | INSPECTOR: JB                                                                       |                | DRILLER: Great Plains  |          |                         |                                                    |
|                                                                                                                                |                                                                              |                      |                                                                                   | Geoprobe                                                                            |                | FOREMAN: Louis Novotny |          |                         |                                                    |

## **Sunshine Cleaners Pre-CERCLIS Screening Assessment**



**PRE-CERCLIS SCREENING ASSESSMENT**

**FOR**

**Sunshine Laundry & Cleaners  
1012 NW 1<sup>st</sup> Street  
Oklahoma City, Oklahoma County, Oklahoma, 73106**

**February 2014**

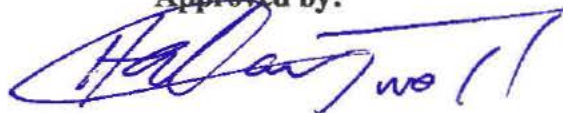
**Prepared for:  
United States Environmental Protection Agency  
Region VI**

**Prepared by:**

A handwritten signature in black ink that reads "A. Samwel".

**Aron Samwel, Environmental Programs Specialist IV**

**Approved by:**

A handwritten signature in blue ink that reads "Hal Cantwell".

**Hal Cantwell, Environmental Programs Specialist IV**

## SCREENING ASSESSMENT CHECKLIST/DECISION FORM

This checklist can assist the site investigator during the screening. It will be used to determine whether further steps in the site investigation process are required under CERCLA. Use additional sheets, if necessary.

**Checklist Preparer:** Aron Samwel, Environmental Programs Specialist 2/5/2014  
(Name/Title) (Date)

P.O. Box 1677, Oklahoma City, OK 73101 (405) 702-5123  
(Address) (Phone)  
aron.samwel@deq.ok.gov  
(E-Mail Address)

**Site Name:** Sunshine Cleaners

**Previous Names (if any):**

**Site Location:** 1012 NW 1<sup>st</sup> Street  
(Street)  
Oklahoma City Oklahoma OK 73106  
(City) (CTY) (ST) (Zip)

**Latitude:** 35.468641° **Longitude:** -97.529154°

**Complete the following checklist. If “yes” is marked, please explain below.**

YES NO Unknown

|                                                                                                                                                                                                                                                                                                                             |  |   |   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---|---|
| 1. Does the site already appear in CERCLIS?                                                                                                                                                                                                                                                                                 |  | X |   |
| 2. Is the release from products that are part of the structure of, and result in exposure within, residential buildings or businesses or community structures?                                                                                                                                                              |  |   | X |
| 3. Does the site consist of a release of naturally occurring substance in its unaltered form, or altered solely through naturally occurring processes or phenomena, from a location where it is naturally found?                                                                                                            |  | X |   |
| 4. Is the release into a public or private drinking water supply due to deterioration of the system through ordinary use?                                                                                                                                                                                                   |  | X |   |
| 5. Is some other program actively involved with the site (i.e., another Federal, State, or Tribal program)?                                                                                                                                                                                                                 |  | X |   |
| 6. Are the hazardous substances potentially released at the site regulated under a statutory exclusion (i.e., petroleum, natural gas, natural gas liquids, synthetic gas usable for fuel, normal application of fertilizer, release located in a workplace, naturally occurring, or regulated by the NRC, UMTRCA, or OSHA)? |  |   | X |
| 7. Are the hazardous substances potentially released at the site excluded by policy considerations (e.g., deferral to RCRA Corrective Action)?                                                                                                                                                                              |  | X |   |

|                                                                                                                                                                                                                                                                                                                                                                                                                 |  |   |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---|--|
| 8. Is there sufficient documentation that clearly demonstrates that there is no potential for a release that could cause adverse environmental or human health impacts (e.g., comprehensive remedial investigation equivalent data showing no release above ARARs, completed removal action, documentation showing that no hazardous substance releases have occurred, EPA approved risk assessment completed)? |  | X |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---|--|

Please explain all "yes" answer(s), attach additional sheets if necessary: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Site Determination: ☒ Enter the site into CERCLIS. Further assessment is recommended (explain below).  
☐ The site is not recommended for further action (explain below).

**DECISION/DISCUSSION/RATIONALE:** Sunshine Cleaners is a former drycleaner. The 17,000 square feet building was built in 1929. It began business in the 1930s and ceased operations in the 1980s. After dry cleaning operations ceased, it was used as a storage warehouse until being boarded up by the City of Oklahoma City in 1989. During operation, it is unknown what chemicals were used for cleaning, but tetrachloroethylene was widely used by the industry.

Based upon potentially poor hazardous waste management practices, and the close proximity of nearby workers, the Oklahoma Department of Environmental Quality (DEQ) is recommending additional investigation be conducted on the Sunshine Cleaners site.

Regional EPA Reviewer: \_\_\_\_\_ Date: \_\_\_\_\_  
State Agency/ Tribe: DEQ a. Samuel Date: 2-5-14

### Description

The following description of the Sunshine Cleaners site was obtained from Oklahoma County Property Records, and a site reconnaissance conducted on January 16, 2014.

The Sunshine Cleaners site is located at 1012 NW 1<sup>st</sup> Street, Oklahoma City, Oklahoma. The site is an abandoned property currently owned by (b) (6) since 2002. The 17,000 square foot building was built in 1929 by the Reinhart & Donovan Company. The first story was a Laundry with steam boilers, electric generators, engines, washing equipment, water softeners, and storage tanks. The second story held offices, rest rooms, and a dining room. In 1969 (b) (6) bought the property and started Swan Towel



& Linen Service, by 1981 (b) (6) sold the property to his ex-wife, Carolyn. Carolyn sold the property in 1989 to (b) (6) the same year the City of Oklahoma City boarded the unsecured building.

The Sunshine Cleaners site is located in an industrial area on the southwest corner of NW 1<sup>st</sup> Street and Classen. To the north is a construction equipment rental business called WACO Rentals, to the south is an unoccupied storage warehouse, to the west is a screen-printing store called Ski's Tees and further west an industrial engine parts and machine shop, and to the east is Southwest Tile and Marble. The 17,000 square foot building is located on a half-acre lot. The brick building has a concrete floor, steel trusses, and no roof. Most of the doors and windows are boarded up. There is some staining in the alleyways and inside the building. There was evidence of trespassing. It appears like there was a shipping and receiving area on the west and south sides of the building. Old advertisements from The Oklahoman newspaper show that the cleaners had a drive thru (Appendix C). It appears that inside the building, a boat, front loader, police car, and bus are being stored (Appendix D).

No records were found for Sunshine Cleaners in Oklahoma City in DEQ's files. It is unknown if hazardous waste was generated, but most drycleaners during this time period used tetrachloroethylene.

**Appendix A** shows the location and boundaries of the Sunshine Cleaners site. **Appendix B** provides an aerial of the Sunshine Cleaners site and the latitude and longitude. **Appendix C** provides the historical advertisements. **Appendix D** provides a photo log from the site reconnaissance.

### **Pathway Assessment**

The Sunshine Cleaners site is located in an industrial area. The terrain is relatively flat with minor changes in elevation with the center of the site approximately 1200 feet above mean sea level. The potential pathways for this Pre-CERCLIS Screening Assessment include air, soil, surface water, and ground water. No sampling data was available.

### **Air**

Based on the 2010 census, Oklahoma City has a population of approximately 599,199 persons, and is located in Oklahoma County, which has a population of 3,815,780 persons. Using ArcGIS, the following population estimates were derived for the site: 2,088 persons reside within a 0.25 mile radius; 3,301 persons reside within a 0.50 mile radius; 7,070 persons reside within a 1 mile radius; 22,049 persons reside within a 2 mile radius; 53,089 persons reside within a 3 mile radius; and 100,956 persons reside within a 4 mile radius. Emerson Alternative High School is located 0.51 miles northeast, Villa Teresa Catholic School is located 0.89 miles northeast, and Eugene Fields Elementary is located 1.04 miles north of the site. No blowing particulate was noted during the site reconnaissance. There is no current indication of a potential release from Sunshine Cleaners to the air pathway, however if tetrachloroethylene has been released, it volatilizes quickly to the atmosphere.

### **Soil**

A gravel parking lot is located on the west side of Sunshine Cleaners, a sidewalk on the north side, a concrete alleyway on the south side, and a grassed area on the east side. It appears that inside the building is a concrete floor. According to the Natural Resources Conservation Service Custom Soil Resource Report generated for this site, the site falls completely in Urban land ([websoilsurvey.nrcs.usda.gov](http://websoilsurvey.nrcs.usda.gov)). There is some staining in the alleyways and inside the building. It is unknown if there was a release of tetrachloroethylene to the ground.

### **Surface Water**

Surface water presumably flows south along the roadways until it eventually meets the North Canadian River, approximately 1.2 miles south. According to the EPA's Surf Your Watershed website (<http://cfpub.epa.gov/surf/locate/index.cfm>), the site is located within the Lower North Canadian Watershed. Oklahoma Climatological Survey says the average annual rainfall for Oklahoma County is 36.21 inches ([www.ocs.ou.edu](http://www.ocs.ou.edu)). There is no known release from Sunshine Cleaners to the surface water pathway.

### **Ground Water**

The residents of Oklahoma City are supplied water by the City of Oklahoma City. Water comes from several lakes: Lake Hefner, 7 miles northwest; Lake Overholser, 8 miles west; and Lake Stanley Draper, 9 miles southeast (where water is pumped from Lake Atoka, 100 miles southeast). The site is in a recharge area for the terrace and alluvial deposits of the North Canadian River. The site is also in an area of recharge for the Garber Wellington Formation. The Garber Wellington is a major source of ground water in Central Oklahoma. There is no information on whether there has been a release to the ground water.

### **Summary and Conclusion**

In conclusion, the Sunshine Cleaners site was a dry cleaner that operated from the 1930s to the 1980s most likely using tetrachloroethylene. The site is surrounded by businesses, with schools and residences nearby. The North Canadian River is 1.2 miles south, and ground water is used for drinking in the area.

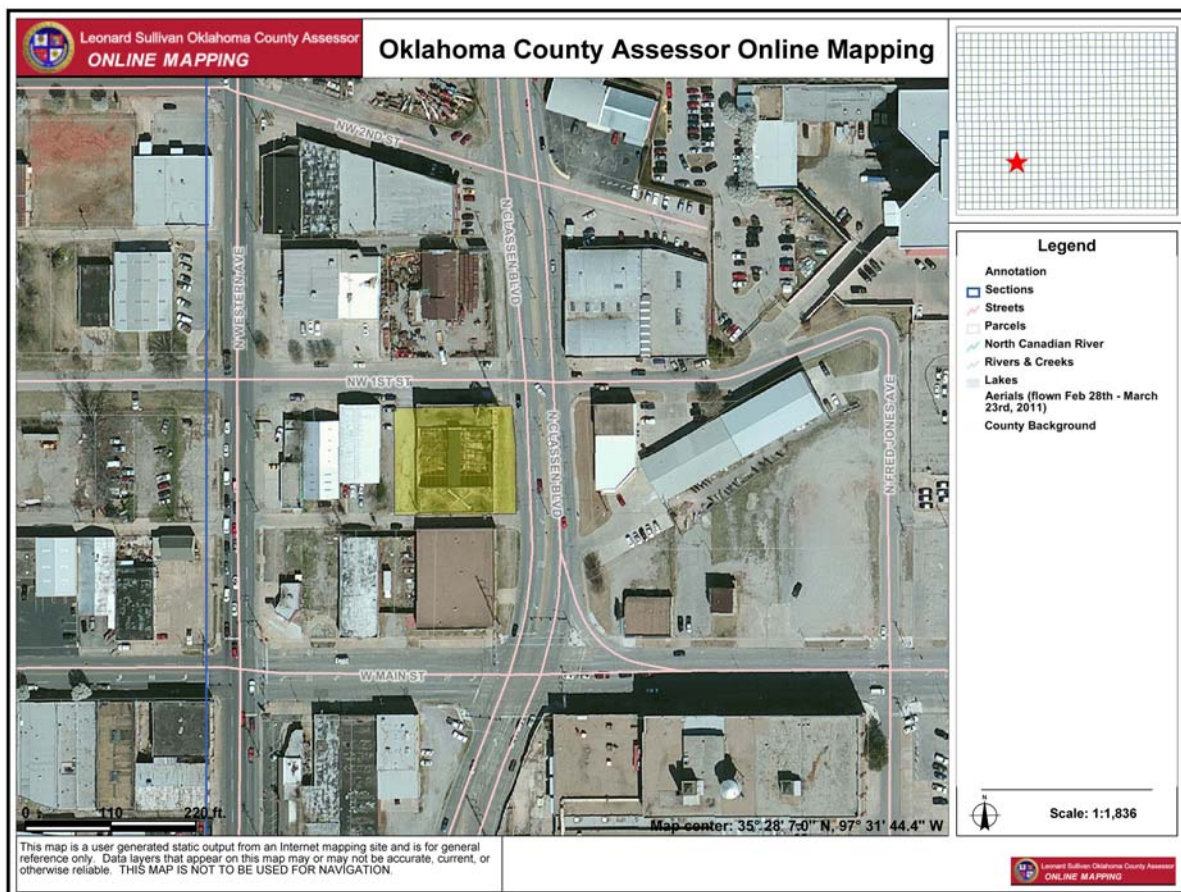
Due to the potential release of tetrachloroethylene and the close proximity of residents, workers, surface water, and ground water resources, DEQ is recommending additional investigation be conducted at the Sunshine Cleaners site.



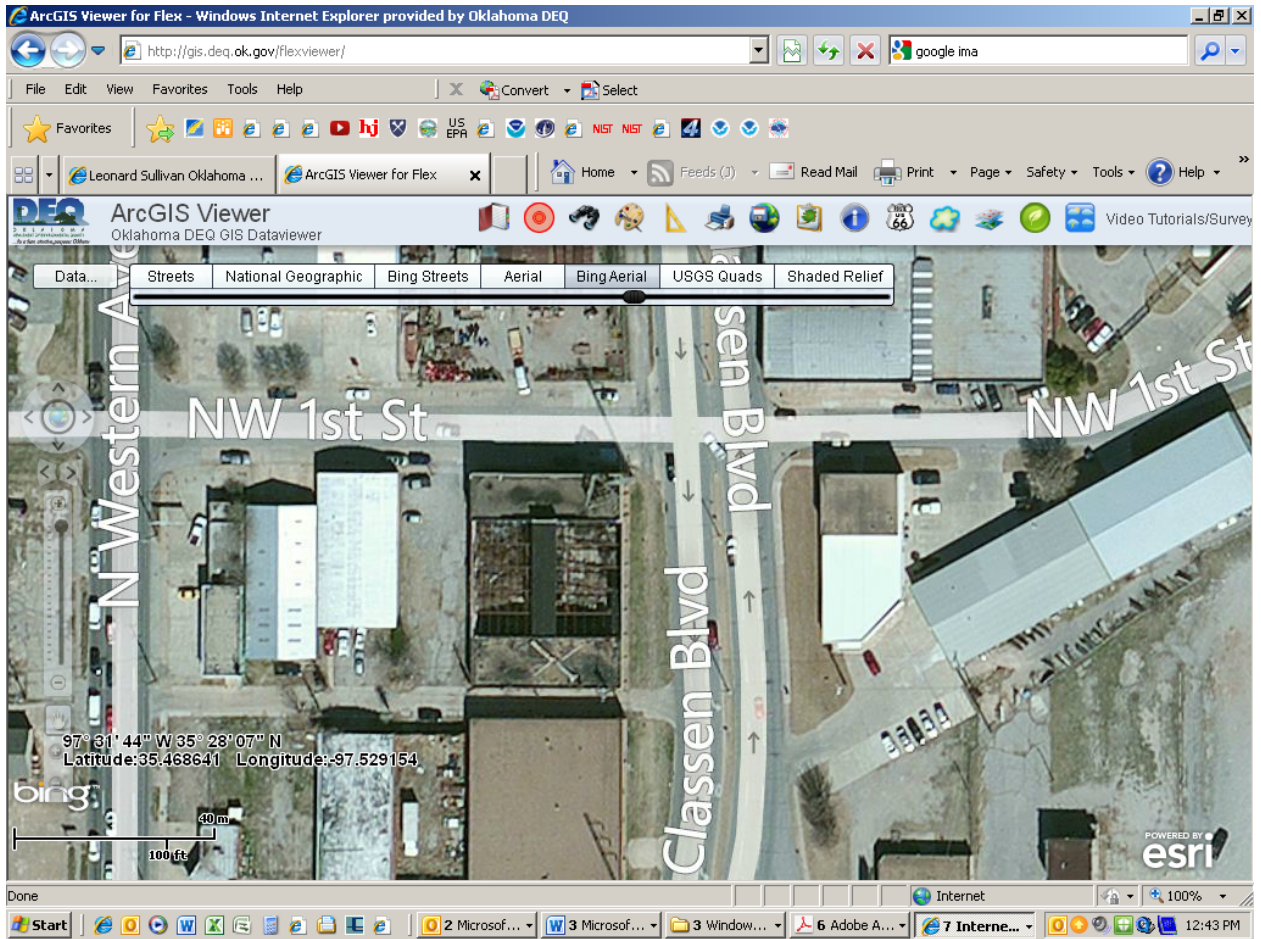
## **APPENDICES:**

- A. Site Location Map
- B. Site Map
- C. Advertisements
- D. Photographic Documentation

# APPENDIX A SITE LOCATION MAP



## APPENDIX B SITE MAP



## APPENDIX C ADVERTISEMENTS

# HERE WE ARE!

Corner of N. W. 1st  
& The New & Modern  
Classen Boulevard



## THE SUNSHINE LAUNDRY & DRY CLEANERS

with  
Oklahoma City's most convenient Laundry & Dry Cleaning  
**DRIVE THRU SERVICE**

~~~~~ FREE ~~~~~    ~~~~~ SPECIAL ~~~~~    ~~~~~ FREE ~~~~~

A pair of men's shoes will be polished "Sunshine" bright free and returned with your laundry when left with your bundle of wash in our convenient "Lazy Man's" drive thru department.

This is only one of many advantages which can be yours when you deposit your laundry worries with our "Leave Your Laundry—Never Leave Your Car" service.

FOR FREE PICK-UP AND DELIVERY SUPER SERVICE—PHONE FO 5-7494

right here



DON'T MISS IT!

THE SUNSHINE SHOESHINE SPECIAL

Leave a pair of shoes and your bundle of washday worries with Nord Lee—our Drive-Thru Department—both laundry and shoes will be returned to you sparkling! The least dry at economical cash and carry rates, and the shoes? Why FREE, of course!!

One day bachelor bundle shirt service—6 shirts ONLY \$1.00
Cleaning fresh as new—laundry speckling, too
Free pick up and Delivery speedy service—Phone FO 5-7494

LET THE SUNSHINE LAUNDRY CHEER YOUR WASHDAY BLUES
AT NO EXTRA COST PUT A SHINE ON YOUR SHOES!

Corner First & Classen
Telephone FO 5-7494

APPENDIX D
PHOTOGRAPHIC DOCUMENTATION

Date: 1/16/14
Taken by: Aron Samwel *A.S.*
Looking: Southeast
Witness: Hal Cantwell *H*
Comments: North side of Sunshine Cleaners



Date: 1/16/14
Taken by: Aron Samwel *a.s.*
Looking: Northwest
Witness: Hal Cantwell *H*
Comments: South side of Sunshine Cleaners



Date: 1/16/14
Taken by: Aron Samwel *a.s.*
Looking: East
Witness: Hal Cantwell *H*
Comments: South side of Sunshine Cleaners



Date: 1/16/14
Taken by: Aron Samwel *a.s.*
Looking: Southeast
Witness: Hal Cantwell *H*
Comments: West side of Sunshine Cleaners



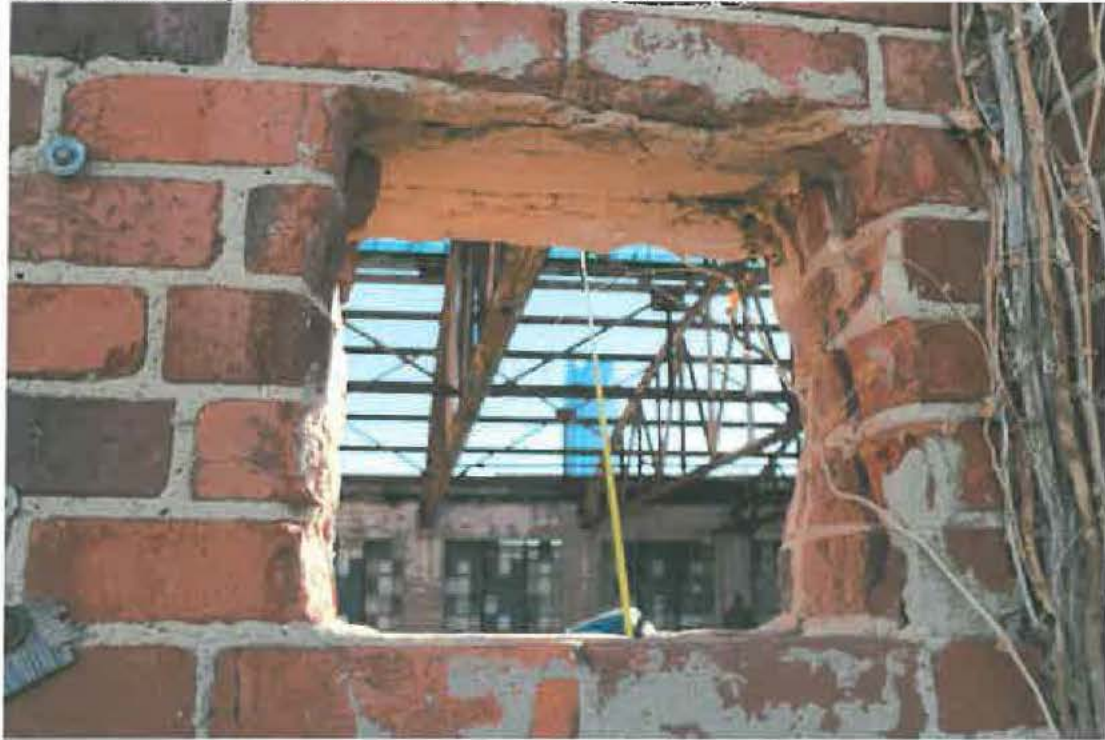
Date: 1/16/14
Taken by: Aron Samwel *a.s.*
Looking: North
Witness: Hal Cantwell *H*
Comments: West side of Sunshine Cleaners



Date: 1/16/14
Taken by: Hal Cantwell *HC*
Looking: North
Witness: Aron Samwel *A.S.*
Comments: East side of Sunshine Cleaners



Date: 1/16/14
Taken by: Hal Cantwell *HC*
Looking: East
Witness: Aron Samwel *a.s.*
Comments: Open window of Sunshine Cleaners



Date: 1/16/14
Taken by: Hal Cantwell 44
Looking: East
Witness: Aron Samwel *A.S.*
Comments: Inside the abandoned Sunshine Cleaners



Date: 1/16/14
Taken by: Hal Cantwell *HC*
Looking: South
Witness: Aron Samwel *A.S.*
Comments: Inside the abandoned Sunshine Cleaners



LAND PROTECTION DIVISION
CONTROL SHEET

Subject: Sunshine Cleaners Program Code D 582
Pre-CERCLIS

Type of Letter: _____

Date Draft Submitted: 2-3-14

Send Copies to: _____

Initials _____ Date _____

1. Typist _____
2. Preparer (Add or mark through names listed below as appropriate for review of this letter) Q. S. 2-3-14

Letters to be submitted in draft (not on letterhead) form to the following:

3. Preparer's Supervisor Hal Cantwell H 3/5/14
4. Compliance _____
5. Attorney/Legal _____
6. Clerical Linda Yarker _____
7. Signatory _____
8. _____

Final letter (prepared on letterhead & ready for mailing) to be submitted to the following:

1. Preparer (I have re-read this letter for content & quality) Q. S. 2-5-14
2. Data Entry (if applicable) _____
3. Clerical Zy 2-5-14
4. Preparer's Supervisor _____
5. Signature _____

Letter will be returned to clerical person for copying and mailing.

Date letter mailed/Initial: e-mailed 2-5-14 Zy
Certified Mail # _____

(This control sheet is to be attached to file copy of final letter and placed in facility file.)

Reference 12: Sunshine Cleaners Hydrological memorandum

Memorandum

March 23, 2015

To: File

From: Hal Cantwell, Environmental Programs Specialist

Re: Hydrogeology and Ground Water Use
Sunshine Cleaners
Sw¹/₄ Sec33 T12N R3W
1012 NW 1st ST, Oklahoma City
Oklahoma County, Oklahoma

Oklahoma County is in the Central Lowland physiographic province. The summers are hot and the winters cool.

Geology

The Sunshine Cleaners Site sits atop Quaternary-age alluvium associated with the Oklahoma (North Canadian) River. The alluvium is made up of sand, silt, clay and lenticular beds of gravel. The thickness of the alluvium ranges from about 30 to 100 feet and probably averages about 50 feet along major streams. Along minor streams, thickness ranges from a few feet to about 50 feet and probably averages about 25 feet. The alluvium overlays the Salt Plains Formation of the Hennessey Group. The Salt Plains Formation is a red-brown blocky shale and orange-brown siltstone 200 feet thick.

Hydrogeology

The alluvium is an aquifer in this area. The general direction of flow is to the south towards the Oklahoma River. Recharge is through direct infiltration or by waters from the river depending on the proximity to the river channel.

References:

Bingham, Roy H. and Moore, Robert L., 1975, Hydrologic Atlas 4, "Reconnaissance of the water resources of the Oklahoma City Quadrangle, Central Oklahoma," Oklahoma Geological Society, Norman, Oklahoma.

Johnson, Kenneth S., 1993, "Maps Showing Principal Ground-Water Resources and Recharge Areas in Oklahoma" Oklahoma Geological Survey, Oklahoma City, Oklahoma.

Reference 13; Endangered and Threatened Listed species believed to or known to occur in Oklahoma



Enter Search Term(s):

Search

[ECOS](#) > [Species Reports](#) > [Species occurrence by state](#) > Listed species believed to or known to occur in Oklahoma

Listed species believed to or known to occur in Oklahoma

- Notes:
- As of 02/13/2015 the data in this report has been updated to use a different set of information. Results are based on where the species is believed to or known to occur. The FWS feels utilizing this data set is a better representation of species occurrence. Note: there may be other federally listed species that are not currently known or expected to occur in this state but are covered by the ESA wherever they are found; Thus if new surveys detected them in this state they are still covered by the ESA. The FWS is using the best information available on this date to generate this list.
 - This report shows listed species or populations believed to or known to occur in Oklahoma
 - This list does not include experimental populations and similarity of appearance listings.
 - This list includes species or populations under the sole jurisdiction of the National Marine Fisheries Service.
 - Click on the highlighted scientific names below to view a Species Profile for each listing.

Listed species -- 24 listings

Animals -- 21 listings

| Status | Species/Listing Name |
|--------|--|
| E | Bat, gray Entire (Myotis grisescens) |
| E | Bat, Indiana Entire (Myotis sodalis) |
| E | Bat, Ozark big-eared Entire (Corynorhinus (=Plecotus) townsendii ingens) |
| E | Beetle, American burying Entire (Nicrophorus americanus) |
| T | Cavefish, Ozark Entire (Amblyopsis rosae) |
| E | Crane, whooping except where EXPN (Grus americana) |
| E | Curlew, Eskimo Entire (Numenius borealis) |
| T | Darter, leopard Entire (Percina pantherina) |
| T | Knot, red (Calidris canutus rufa) |
| T | Madtom, Neosho Entire (Noturus placidus) |
| E | Mapleleaf, winged Entire; except where listed as experimental populations (Quadrula fragosa) |
| E | Mucket, Neosho (Lampsilis rafinesqueana) |
| E | Mussel, scaleshell (Leptodea leptodon) |
| T | Plover, piping except Great Lakes watershed (Charadrius melodus) |
| E | Pocketbook, Ouachita rock Entire (Arkansia wheeleri) |
| T | Prairie-chicken, lesser (Typanuchus pallidicinctus) |
| T | Rabbitsfoot (Quadrula cylindrica cylindrica) |
| T | Shiner, Arkansas River Arkansas R. Basin (Notropis girardi) |
| E | Tern, least interior pop. (Sterna antillarum) |
| E | Vireo, black-capped Entire (Vireo atricapilla) |
| | |

| | |
|---|---|
| E | Woodpecker, red-cockaded Entire (Picoides borealis) |
|---|---|

Plants -- 3 listings

| Status | Species/Listing Name |
|--------|--|
| E | Harperella (Ptilimnium nodosum) |
| T | Orchid, eastern prairie fringed (Platanthera leucophaea) |
| T | Orchid, western prairie fringed (Platanthera praeclara) |

Reference 14, US Census Bureau Oklahoma City Quick Facts



State & County QuickFacts

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[FAQ](#)

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QuickFacts Beta

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-- SELECT A FACT --

SET



TABLE



MAP



CHART



DASHBOARD


Oklahoma counties- [selection map](#)

Oklahoma cities- [place search](#)
[More Oklahoma data sets](#)
[Share this page](#)

Go

Go

Oklahoma City (city), Oklahoma

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| People QuickFacts | Oklahoma City | Oklahoma |
|---|---------------|-----------|
| Population, 2013 estimate | 610,613 | 3,853,118 |
| Population, 2010 (April 1) estimates base | 580,005 | 3,751,616 |
| Population, percent change - April 1, 2010 to July 1, 2013 | 5.3% | 2.7% |
| Population, 2010 | 579,999 | 3,751,351 |
| Persons under 5 years, percent, 2010 | 7.9% | 7.0% |
| Persons under 18 years, percent, 2010 | 25.4% | 24.8% |
| Persons 65 years and over, percent, 2010 | 11.3% | 13.5% |
| Female persons, percent, 2010 | 50.8% | 50.5% |
| White alone, percent, 2010 (a) | 62.7% | 72.2% |
| Black or African American alone, percent, 2010 (a) | 15.1% | 7.4% |
| American Indian and Alaska Native alone, percent, 2010 (a) | 3.5% | 8.6% |
| Asian alone, percent, 2010 (a) | 4.0% | 1.7% |
| Native Hawaiian and Other Pacific Islander alone, percent, 2010 (a) | 0.1% | 0.1% |
| Two or More Races, percent, 2010 | 5.2% | 5.9% |
| Hispanic or Latino, percent, 2010 (b) | 17.2% | 8.9% |
| White alone, not Hispanic or Latino, percent, 2010 | 56.7% | 68.7% |
| Living in same house 1 year & over, percent, 2009-2013 | 79.4% | 82.5% |
| Foreign born persons, percent, 2009-2013 | 12.0% | 5.5% |
| Language other than English spoken at home, pct age 5+, 2009-2013 | 19.2% | 9.4% |
| High school graduate or higher, percent of persons age 25+, 2009-2013 | 84.8% | 86.4% |
| Bachelor's degree or higher, percent of persons age 25+, 2009-2013 | 28.1% | 23.5% |
| Veterans, 2009-2013 | 44,597 | 312,492 |
| Mean travel time to work (minutes), workers age 16+, 2009-2013 | 20.3 | 21.0 |
| Housing units, 2010 | 256,930 | 1,664,378 |
| Homeownership rate, 2009-2013 | 59.4% | 67.1% |
| Housing units in multi-unit structures, percent, 2009-2013 | 26.0% | 15.2% |
| Median value of owner-occupied housing units, 2009-2013 | \$132,900 | \$112,800 |
| Households, 2009-2013 | 227,700 | 1,444,081 |
| Persons per household, 2009-2013 | 2.55 | 2.55 |
| Per capita money income in past 12 months (2013 dollars), 2009-2013 | \$25,640 | \$24,208 |

| | | |
|---|---|-----------------|
| Median household income, 2009-2013 | \$45,824 | \$45,339 |
| Persons below poverty level, percent, 2009-2013 | 18.2% | 16.9% |
| Business QuickFacts | | |
| | Oklahoma City | Oklahoma |
| Total number of firms, 2007 | 56,575 | 333,797 |
| Black-owned firms, percent, 2007 | 6.3% | 3.1% |
| American Indian- and Alaska Native-owned firms, percent, 2007 | 3.5% | 6.3% |
| Asian-owned firms, percent, 2007 | 4.1% | 2.0% |
| Native Hawaiian and Other Pacific Islander-owned firms, percent, 2007 | F | 0.0% |
| Hispanic-owned firms, percent, 2007 | 4.1% | 2.3% |
| Women-owned firms, percent, 2007 | 27.2% | 25.3% |
| <hr/> | | |
| Manufacturers shipments, 2007 (\$1000) | 7,711,818 | 60,681,358 |
| Merchant wholesaler sales, 2007 (\$1000) | D | 48,074,682 |
| Retail sales, 2007 (\$1000) | 8,430,824 | 43,095,353 |
| Retail sales per capita, 2007 | \$15,444 | \$11,931 |
| Accommodation and food services sales, 2007 (\$1000) | 1,163,856 | 5,106,585 |
| <hr/> | | |
| Geography QuickFacts | | |
| | Oklahoma City | Oklahoma |
| Land area in square miles, 2010 | 606.41 | 68,594.92 |
| Persons per square mile, 2010 | 956.4 | 54.7 |
| FIPS Code | 55000 | 40 |
| Counties | Canadian County
Cleveland County
Oklahoma County
Pottawatomie County | |

[Download these tables - delimited](#) | [Download these tables - Excel](#) | [Download the full data set](#)

- (a) Includes persons reporting only one race.
(b) Hispanics may be of any race, so also are included in applicable race categories.

D: Suppressed to avoid disclosure of confidential information
F: Fewer than 25 firms
FN: Footnote on this item for this area in place of data
NA: Not available
S: Suppressed; does not meet publication standards
X: Not applicable
Z: Value greater than zero but less than half unit of measure shown

Source U.S. Census Bureau: State and County QuickFacts. Data derived from Population Estimates, American Community Survey, Census of Population and Housing, County Business Patterns, Economic Census, Survey of Business Owners, Building Permits, Census of Governments
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4/20/15

